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THE UNIVERSITY OF ALBERTA

FORMS OF AGGRESSIVE BEHAVIOR
IN YOUNG CHILDREN

by

© COLLEEN LOUISE KENNEDY

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
AND RESEARCH IN PARTIAL FULFILLMENT
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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled, "Forms of Aggression in Young Children" submitted by Colleen Louise Kennedy in partial fulfillment of the requirements for the degree of Master of Education.

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ABSTRACT

The purpose of this investigation was to describe occurrences of aggressive behavior and to examine the functions of aggression in young children using an ethological approach (after Hartup, 1973). The data was collected in preschool settings in which the observer recorded the free play behavior of the children.

The subjects involved in this study consisted of twenty-one children ranging in age from four and one-half to five and one-half years, enrolled in one kindergarten program located in a classroom of an elementary school in a large urban setting.

Observations were conducted over a six-week period. The method of observation was a combination of time and event sampling in which both aggressive and non-aggressive activities were recorded. The behavior of each child was observed every other day, for a period of two minutes.

A number of procedures were followed in the analysis of the data. Aggressive behavior and antecedents preceding acts of aggression were examined by description and function utilizing a system of categories developed by Hartup (1973). Each aggressive act was coded as to general function: (1) Hostile, or person-directed, and (2) Instrumental or object-directed. A finer analysis of the data involved categorizing aggressive acts and antecedents preceding aggressive acts by description and function. Additional categories were devised to obtain information pertaining to group size, sex, context, and "playful" aggression.

The findings of the study indicated that instrumental (as opposed to hostile) aggression was the primary form of aggressive behavior for both sexes. Furthermore, of the total aggressive behavior observed, it was found that the male subjects participated in a much higher frequency of aggressive behavior than the female subjects.

It was also found that antecedents leading to acts of aggression were most often related to dealings of a territorial nature. Blocking behavior very often preceded instrumental forms of aggression while such "personal behaviors" as bodily contact, derogation, and social comparisons appeared as antecedents to hostile forms of aggressive behavior.

Finally, "playful" aggression was found to be an important aspect of children's development in that it provided them with experiences in attempting to deal with aggressive situations.

A number of conclusions and implications for teacher education were suggested.

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CHAPTER I

INTRODUCTION TO THE INVESTIGATION

Aggression has been defined as that "behavior which is intended to produce injury" (Hartup, 1973, p. 1). Singer (1973) defines aggression as "the intentional delivery of a harmful stimulus to another person or personal property" (p. 267). Whatever the definition, the term itself is difficult to grasp owing to its lack of specificity. Hartup (1973) criticizes the definition in light of the fact that our conceptual understanding of aggression includes reference to both an antecedent (intentional) and a consequence (injury). As such, he feels that there is a certain elasticity to the concept which does not allow for precise empirical investigation.

Now despite the fact that there are problems in adequately defining aggression, there is a need to examine aggressive behavior within the context of some theoretical framework. It is important, then, that some precautions be observed. Hartup (1973) provides us with a number of cautionary guidelines which he states as follows:

> 1. There is no body of data to suggest that one definition of aggression is purer than another.
>
> 2. A rationale should accompany whichever definition of aggression the investigation proposes.
>
> 3. A general reductionist effort should be made with respect to the aggression concept. Sub-categories are needed which are less elastic than those in current vogue but which, at the same time, are sufficiently inclusive to ensure a modicum of ecological validity (Hartup, 1973, p. 4).

Numerous studies and speculative papers dealing with children's aggression have been published during the past fifty years. Of these investigations, some were designed simply to identify situations in which such aggressive behaviors as quarreling, fighting, ridicule, rebuke, and rejection occurred. Other studies have been directed toward the determinants of children's aggression (e.g., the frustration-aggression hypothesis). A number of investigations have dealt with non-frustrative influences that lead to aggression (e.g., Bandura, and Ross and Ross, 1963). A smaller selection of studies have dealt with such varied topics as the role of emotional factors (i.e., anxiety and arousal), social motives (i.e., need for approval and affection), social evaluation (i.e., the individual's status or power in the peer group), and self-esteem, as these are involved in aggressive functioning (de Wit and Hartup, 1974).

Although the literature dealing with aggression is extensive, little research concerning young children has been conducted in natural or non-contrived situations. There is a pressing need for naturalistic studies of aggressive behavior in which the natural context provides the cues essential to establish what Hartup calls "the functional significance (i.e., the survival value) of the activity." Investigations of this kind are a necessary prerequisite to studies conducted in laboratory settings. When naturalistic investigative procedures are used, there is a greater opportunity to observe aggressive acts in their most natural contexts. On the other hand, in laboratory settings, the aggression observed may be labelled as actual aggressive behavior, when in fact, it was a form of "pseudo-aggression." Hence, ecological validity is more likely to be ensured through studies conducted in natural settings.

Purpose of the Study

The purpose of this investigation was to describe occurrences of aggressive behavior and to examine the functions of aggression (how does aggression work) in young children using a naturalistic observational technique developed by Willard W. Hartup (1973) and his associates at the University of Minnesota. The data was collected in preschool settings in which the observer recorded the free play behavior of the children.

Research Questions

For the purposes of this investigation, a number of research questions were posed:

1. What percentage of the total observed behavior will be classified as aggressive behavior?
2. Is there a difference in the frequency of overall aggressive behavior between males and females? For example, do instrumental and hostile acts of aggression occur with the same frequency in male and female subjects?
3. Is instrumental aggression the primary form of aggression amongst four and one-half to five and one-half year old

children?

4. What are the antecedents of acts of aggression? Are there discernible patterns to the antecedents?

Definitions

Aggression

Aggression was defined as "The class of intentional physical and verbal responses which are directed toward an object or another person and that have the capacity to damage or injure physically and/or psychologically" (from Hartup, 1973, p. 15).

Instrumental Aggression

Feshbach (1964) defines instrumental aggression as "activity which produces injury, but injury which appears to be secondary to the acquisition of some other goal." For purposes of this study, instrumental aggression was defined as aggression which was aimed at the retrieval of an object, territory, or privilege where hurt or injury to another person or persons (if it occurred) was viewed as a secondary goal or phenomenon.

Hostile Aggression

Hostile aggression in this study was defined as aggressive activities directed toward a person or object where the primary purpose of the act was to injure or hurt. In other words, there was no apparent goal other than to hurt or injure the other person or, in some cases, an object.

Antecedents of Aggression

Events in the form of behaviors which occurred immediately prior to the aggressive act were considered to be antecedents of the aggressive behavior.

Child, The Target, The Target Child

The terms child, the target, and the target child were used interchangeably in this study to refer to that child who was the subject being observed (as different from other children who entered the observed event but were not the target of the observer's attention).

Natural Settings

Charlesworth (1974) pointed out that laboratory environments cannot be considered as natural environments for children in spite of the fact that laboratories are part of the world as we know it (de Wit and Hartup, 1974, p. 604). For purposes of this study, the term 'natural settings' was defined as settings which are typical for the child and which are essential for survival in his particular culture. One of the 'natural settings' a young child finds himself in is a kindergarten classroom. Hence, in this study, the children were observed in an urban kindergarten program located within a classroom of an elementary school.

Victim

The term victim, in this study, referred to the child being aggressed upon.

Segment, Interval, and Act

Data collected during the observational period was analyzed in terms of the following dimensions:

Segment - refers to the two-minute period of time that governed the overall progression of the observations. During the course of the observational period, 10 to 11 segments of behavior were collected each day.

Interval - each two-minute segment was subdivided into eight - fifteen second intervals. Hence, in the course of an observational period (e. g. one day), 10 or 11 segments of behavior would make up a total of 160 to 176 intervals (16 x 10 or 16 x 11).

Act - refers to a class of individual behaviors. In other words, a number of behaviors would be observed within each interval, and these behaviors would be classified as aggressive acts.

Significance of the Study

Aggression in young children has frequently been observed in contrived settings (settings which are atypical of children). Such observations, however, have been heavily constrained by clinical preconceptions about the form and function of such activity. It is to be hoped that a naturalistic observational study of this nature will provide further insight into the functions of aggression in young children.

Organization of the Report

This chapter has attempted to introduce the problem of aggression, to describe the purpose of the study, state the research questions, define the terms, and briefly discuss the significance of the study of aggressive behavior of young children from a naturalistic viewpoint. The remainder of the study is divided into the following areas:

Chapter II	Related research and literature.
Chapter III	Design of the study.
Chapter IV	Findings.
Chapter V	Summary, conclusions and implications.

CHAPTER II

REVIEW OF THE LITERATURE

In this chapter the three theoretical positions regarding aggression are described. First of all, the psychoanalytic theory was examined using the classical Freudian framework as a basic source for discussion. The behaviorist viewpoint was examined next using Bandura and Walters (1963), Dollard and Miller et al. (1939), and Berkowitz (1962) as primary sources. Finally, the ethological perspective as exemplified by Ardrey (1961), Lorenz (1966), N. F. White (1974), and others was reviewed. A summary statement of the three representative viewpoints concerning aggression follows.

Psychoanalytic Theories of Aggression

In analyzing the different theoretical positions with respect to aggression, it is necessary to begin with Sigmund Freud, for his psychoanalytic theory represents the starting point or basis upon which many subsequent theories follow. When Freud, whom many consider to be the most influential psychological theorist of this century, began his research into the human mind, he paid scant attention to aggression. In point of fact, in his early thinking, he regarded sex as the 'prime mover' of human conduct. Not until 1920, through his experiences in the first World War, did Freud come to view aggression as a primary instinct. His comment at this time is worthy of noting:

> A powerful measure of desire for aggression has to be reckoned as part of man's instinctual endow-

> ment.... Homo homini lupus; who has the power to dispute it in the face of all the evidence in his own life and in history? (quoted in Montague, 1968, Introduction, p. VII).

Freud came to view the human organism as a complex energy system with instincts being the sole source of man's behavior. According to Freud, man is controlled by two primary instincts: an erotic or life building instinct, and a destructive or death-oriented instinct. In this view, the energy level rises within man, and as he seeks to discharge this excess of energy, a conflict between the life instinct and the death instinct results. Since the death instinct is most often blocked by the erotic, life preservation instinct, the subsequent effect is aggression, a secondary response to the external world. In Freud's view, the death instinct must finally conquer since we all have to die.

Freud's view of aggression as a pathological force within man which ought to be eliminated has been highly criticized by theorists who see aggression as a necessary part of our biological inheritance, necessary for the preservation of life and the reproduction of living organisms.

In spite of Freud's notion of the death instinct, his thinking and writing was largely influenced by his concept of the pleasure principle, a principle which formed the basis of his earlier work. According to Freud, man in seeking a state of total relaxation strives to destroy himself as death is the utopia of relaxation. This picture of the organism ridding itself of tension, forms the basis of Freud's thinking concerning instinct. As such, it accounts for his failure to see in aggression anything other than a destructive force.

Freud's thinking regarding aggression, though it stimulated more recent theories, is not helpful in looking at aggression in young children. Some researchers have sought to establish links between the classical ethological view and the Freudian position on aggression. However, at the time Freud was formulating his views, aggression was considered a self-destructive force that was inward turning. Klein, a later disciple of Freud, retained this instinctive view in her hypotheses of the struggle of life (or love) and death (or hate) instincts during the child's formative years. Fletcher (1968) and Storr (1968) have recently attempted to synthesize findings from the two areas (i. e. the conflict between life instincts and death instincts) and to apply them to human aggression (in McGrew, 1972, p. 5).

Frustration-Aggression Theory

Until recently, the most widely held explanation of aggression was that proposed by Dollard and his associates nearly three decades ago. Dollard and associates (J. Dollard, L. W. Doob, N. E. Miller, O. H. Mowrer, and R. R. Sears, 1939) related aggression to frustration and hence the theory became known as the Frustration-Aggression Theory. In explaining this theory, Dollard assumed that frustration was a necessary condition for the occurrence of aggressive behavior. Further to this notion, Miller (1941) stated that other response classes in addition to aggression could be associated with frustration. Over the next thirty years, further revisions as well as criticisms were directed toward the frustration-aggression theory.

The research of Bandura and Walters (1963) revealed that individuals can respond aggressively in situations not because they are frustrated but because they have learned to respond in this manner through observation and imitation. Buss (1961), on the other hand, proposed that because of the short-comings of the frustration-aggression hypothesis, the theory should be dropped completely. Berkowitz (1965) went further to suggest modifications rather than complete rejection of the theory. He extended the frustration-aggression hypothesis by stating that "The existence of frustration does not always lead to some form of aggression and the occurrence of aggressive behavior does not necessarily presuppose the existence of frustration (Berkowitz, 1969, p. 2)."

Disagreements appear to exist among supporters of the frustration-aggression theory as to whether aggression is an innate response, a learned response, or a combination of the two. Although many of the supporters do not deny the possible biological existence of aggression, they tend to stress the importance of experience (learning) as the major cause of aggression. Bandura and Walters (1963) adopted the view that aggression can be totally accounted for in terms of reinforcements. Patterson, Littman and Bricker (1967) proceeded to indicate that both positive and negative reinforcers serve to regulate and control aggressive behavior. Davitz's (1952) study revealed that either aggressive or constructive training can be related to children's subsequent reaction to frustration.

Theorists who tend to recognize the possible biological (innate) source of aggression have attempted to illustrate through experiments with animals that goal blocking may lead to aggressive behavior even without prior learning. Azrin, Hutchinson, and Hake (1963) illustrated the link between aggression and goal-blocking using pigeons. When birds, socially isolated from birth, were suddenly deprived of food rewards after a reinforcement period, they attacked another pigeon in the cage as did non-socially deprived birds. From this experiment the investigators concluded that "the attack behavior was not a result of a history of competition over food" (in Berkowitz, 1969, p. 4). In 1965, Hutchinson, Ulrich, and Azrin found that electric shocks produced fighting in pairs of rats raised in isolation from the time of weaning although not to the same degree as rats with social experiences. They concluded that "the fact that subjects with no history of social interaction did fight, indicates that pain-elicited aggression has an instinctive, or unconditioned basis. . . ." (quoted in Berkowitz, 1969, p. 4). Seay and Harlow (1965) observed that when rhesus monkeys six months of age are separated from their mothers, they experience frustration. As a result of being frustrated, these monkeys exhibited aggression toward peers even though aggression is extremely rare at this age. Moreover, it seems evident the rhesus infants had probably not learned how to act aggressively before this separation. Whether findings such as these can be related to human behavior is debatable. Social scientists such as Lorenz (1966) and Ardrey (1966) have attempted to generalize findings from animal studies to human behavior, especially in their treatment of aggression. Ashley Montague's Man and Aggression (1968) represents a counter-argument to the popularized versions of Ardrey and Lorenz. While it seems evident that such approaches as that of Lorenz and Ardrey are open to criticisms, they do suggest new and productive areas for research. Social scientists who cautiously or otherwise generalize animal behavior to explain and understand human behavior will be discussed in the section dealing with Human Ethology.

A second concern with respect to experiments carried on in the field of frustration-aggression research has been expressed by Buss, who in 1966 stated "There have been hundreds of studies of aggression ... but only a few in which a subject aggresses physically against another person" (McGrew, 1972, p. 6). In most experiments, aggressive behavior has been, and to a large degree still is, observed and measured in laboratory situations and findings are then applied to natural situations. For example, Haner and Brown (1955) attempted to measure aggression in elementary school children by recording the pressure a child exerted on a plunger which stopped a frustration associated buzzer (McGrew, 1972, p. 7). Ulrich (1966) used an indirect approach to measure aggression in his study. That is to say, he attempted to measure behavioral "consequences" and not the behavior patterns themselves. Aggression was measured by the frequency of a button being pushed, where button pressing resulted in the destructive vibration of the other individual's table. In each case, the "other" child and "other" table did not exist.

To sum up, the most recent interpretation of the frustration-aggression hypothesis is that put forth by Berkowitz (1969). Basically, Berkowitz believes that a frustrating event will increase the probability that the thwarted organism will act aggressively soon afterward. Contrary to the original hypothesis (Dollard et al, 1939), Berkowitz states that the existence of frustration does not always lead to some form of aggression, and the occurrence of aggressive behavior does not necessarily presuppose the existence of frustration (Berkowitz, 1969, p. 2).

Even with modifications and revisions, the frustration-aggression theory is apparently losing support. That frustration can lead to aggression would hardly be disputed. However, at the same time, frustration cannot be used to explain aggression in its totality. With this realization in mind, it would appear that theorists of aggression have tended to move toward a more ethological explanation of aggressive behavior.

Ethological Viewpoints on Aggression[1]

Interest in the ethological approach to the study of behavior, specifically aggressive behavior, has come about largely through the writings of Lorenz (1966), On Aggression, Ardrey's (1966), The Territorial Imperative, Storr's (1968) Human Aggression, and Man and Aggression edited by Ashley Montague (1968). While all of the publications are open to criticism, they have succeeded in drawing our attention to an area of significant interest and concern - the ethological aspects of aggressive behavior. From the ethological perspective, aggression is perceived as being a constructive, as well as a destructive, behavioral response. Aggression has thus been identified as being responsible for both the preservation of the individual and the human species. To quote the American analyst, Clara Thompson:

> Aggression is not necessarily destructive at all. It springs from an innate tendency to grow and master life which must be characteristic of all living matter. Only when this life force is obstructed in its development do ingredients of anger, rage or hate become connected with it (in Storr, 1968, p. 42).

As Clara Thompson indicated, only when aggressive drives become blocked or frustrated do aggressive acts become objectionable or dangerous. Thus from the ethological viewpoint aggression is seen as a constructive drive evolving from Darwin's (1963) principle of natural selection and as being an essential part of human instinctive equipment. Positive functions of aggressive drives can then be identified in activities involving the spacing of populations, (evidently this does not include humans) in sexual selections, in the defense of the young, and in the creation of order in societies.

---

[1] Ethology has been defined by Eibl-Eibesfeldt (1975) as "the biology of behavior." In trying to understand why an animal behaves the way it does, ethologists search for the functions of that observed behavior pattern in order to learn what selection pressures have shaped their evolution. By applying the comparative technique developed in the biological sciences, ethologists attempt to reconstruct the phylogeny of motor patterns. They explore the processes underlying the ontogenetic development and finally search for the causes, investigating the releasing stimuli and underlying physiological processes (from Eibl-Eibesfeldt, 1975, pp. 9-10).

From the ethological perspective, behavior is viewed as always having a cause. In determining the cause of the behavior, the ethological investigator observes the "external sensory stimuli" as well as the "internal drive mechanisms" of the central nervous system, hormones, and "internal sensory stimuli." Such an investigative procedure appears to be a more logical approach to the study of aggressive behavior in that neither the psychoanalytic nor behavioral viewpoints have been able to satisfactorily explain aggression in terms of being either completely innate or completely controlled by the environment. The recognition of the role played by both external stimuli and innate responses in the determination of behavior of both primates and non-primates has drawn support for the ethological viewpoint. Support and recognition have been directed to the ethological viewpoint for a number of important reasons. First of all, information is gathered through direct observation of the subject in the natural habitat. Secondly, primate and non-primate studies have been made using a comparative approach to form the basis for research in the area of human behavior.

Although ethology is recognized as a comparatively new field of research in the study of human behavior, the understanding that some behavior is relatively unaffected by individual experience is not a new idea. F. A. V. Pernau (in Eibl-Eibesfeldt, 1975), as early as 1716, recognized that animals possessed innate skills in addition to those they acquired. D. A. Spalding (1873) reinforced Pernau's idea of the maturation of innate behavior patterns by using swallows to demonstrate that flight in birds was an innate response pattern.

Between 1734 and 1910, a number of studies were reported which dealt with the topic of innate response patterns. Historically, these studies point out the long-standing interest in behavior from an ethological point of view.

Perhaps the most famous "ethologist" to appear in the nineteenth century was Charles Darwin. Through his numerous publications he became recognized as a forerunner in the study of behavior in natural settings.

His detailed descriptions of human behavior patterns; his attempts at cross-primate comparisons, and his pioneering efforts to obtain cross-cultural knowledge of human affect and expression more than qualify him as the first human ethologist (McGrew, 1972, p. 16).

Konrad Lorenz (1966) was perhaps the first to appreciate to the fullest extent, the work of Charles Darwin. Working inductively from Darwin's discoveries, and from his own personal observations, Lorenz proposed a synthesis that forms the basis of ethological studies. According to Irenaus Eibl-Eibesfeldt (1975), Lorenz can be credited with the following achievements:

1. He recognized the spontaneity that underlies instinctive movements.
2. He investigated the key stimuli that release a specific behavior prior to all experience and studied the phylogenesis and ontogenesis of innate behavior patterns.
3. In the "instinct-learned intercalation," he found a new mode of integration of innate and acquired components of behavior.
4. In the phenomenon of imprinting, he discovered an inborn disposition to learning.
5. He repeatedly emphasized the importance of these discoveries for the sciences dealing with man.

Lorenz has received severe criticism with respect to: (1) relating animal behavior to human behavior; (2) relating laboratory research to natural conditions; (3) claiming that patterns of aggression are seated in the genes; and (4) for his apparent lack of interest in individual differences. However, his contributions in this field of behavior, both primate and non-primate, far outweigh any of the criticisms directed toward his work.

At the present time most ethological research can be assigned to one of three categories.

1. Research designed to study the behavior of primates and non-primates through observing specific motor patterns (Blurton Jones, 1967 and W. C. McGrew, 1969).
2. Investigations concerned with the study of territoriality and dominance and its relationship to human social

situations (Eric Sundstrom and Irwin Altman, 1974).

3. Investigations using a naturalistic approach in which the focus is not predetermined but rather developed after the study. That is, an approach where an attempt is made to observe all on-going behavior in free-field situations (Ardrey and Lorenz).

McGrew (1972) claims that there are both practical and theoretical advantages in utilizing ethological analysis to investigate young children's behavior. Contemporary ethological analysis function to label, define, and describe behavior objectively, in terms of body parts and motor patterns. Blurton Jones (1967) identified a response pattern which occurs with high frequency during young children's altercations over property as "the beating movement." He defines a beat as:

> an over-arm blow with the palm side of the lightly clenched fist. The arm is sharply bent at the elbow and raised to a vertical position then brought down with great force on the opponent (pp. 354-355).

By using such behavioral categories, ethologists are able to explicitly catalogue the behavior of normal individuals as it is taking place. In this respect, there is no need for such indirect measures as ratings, tests, projective techniques, and like measures. By recording directly, ethologists are able to capture behavior in real-life situations. Moreover, by using sophisticated recording aids (tape recorder, portable videotape, telemetrized microphones) they attempt to ensure that ongoing events are not unduly disrupted.

McGrew (1972) states that the use of discrete behavior patterns enables quantitative analysis. By recording incidences of behavior over time, the examiner is able to note frequencies, combinations, and consequences of behavior patterns (Altmann, 1965). In so doing, ethologists attempt to delineate "constellations" of patterns which occur together with consistent regularity. Constellations form the basis for more general behavior categories such as aggressive, maternal, and hunting which McGrew feels can be defined in terms of their consequences (p. 20).

Ethological Studies of Human Aggressions: A Review of Recent Naturalistic Research

Overview. Numerous studies have been devoted to the analysis of aggression from every conceivable viewpoint and from numerous theoretical perspectives. A review of the research indicates an endless variety of topics. There are longitudinal studies (Emmerich, 1973), and developmental studies (Cairns, 1972). Other studies have focused on such variables as familial variables, race, personality, age, socialization, language, cognition, ethics, teaching techniques, isolation, learning, and social class. The range is extensive. Some studies are closely related to the ethological viewpoint even though they cannot be defined as ethological studies per se. A few of these will be examined below.

One of the areas of concern to any study of aggression is the effect of the independent variable, sex. Studies designed specifically to obtain empirical data on age and sex differences in aggressive behavior are few in number. Poorman (1976) designed a study to investigate age and sex differences relative to aggressive behavior. Results indicated that aggression by and toward females was relatively stable over age, while aggression by males toward males increased markedly. Other studies which have found sex differences in the expression of aggressive behavior have been carried out by Green (1933), Dawe (1934), Muste and Sharpe (1947), Sears (1961), Feshbach (1969), Feshbach and Sones (1970), Campbell and Nadelman (1972), Sand (1973), and De Vito (1975).

Numerous studies have also been conducted which have attempted to link aggressive behavior with various aspects of free play. Studies in the area of social ecology have repeatedly demonstrated that setting or context is a very powerful influence on social behavior. A series of three studies by Patterson (1976) investigated the role of play materials in supporting social interactions (assertive-disruptive interactions and positive-constructive interactions) of nursery school children. The results of the studies suggest that there is an effect of play settings on social interactions of four and five year old children. More specifically, it was found that boys were involved in most of the assertive interactions at all centers.

Other studies relating aggressive behavior with play situations have dealt with such factors as space, amount of equipment, type of equipment, opportunity for play, structuring play, television viewing and its relationship to play (See Loo, 1972, 1976; McGrew, 1970;

Wuellner, 1969; Turner and Goldsmith, 1976; D. Singer and J. Singer, 1974; and Torrance, 1971).

In sum, it would seem that there are at least two major variables related to aggression. The effect of sex and the relationship of various aspects of play to aggressive behavior represent two significant variables in the study of aggression. However, studies of the two variables which we have noted have been drawn from the research literature outside the area of ethological studies of aggression. Few studies are available which are ethological in nature. Recently, however, interest in the direct observation of individual behavior in natural settings has increased considerably (Kalverboer in de Wit and Hartup, 1975, p. 88). The ethological approach may prove helpful in the study of human behavior and particularly the behavior of children. McGrew (1972), Blurton Jones (1972a), Tinbergen and Tinbergen (1972), and others have conducted careful studies of children in nursery schools, kindergartens and in institutions. Presently the focus in ethological research is on preschool-age and mentally or emotionally handicapped children. However, as yet, they do not provide a coherent set of data concerning social development.

The studies which follow have been selected for discussion in that they represent research related to young children which is basically ethological in nature. Owing to the fact that there are so few studies available, considerable attention will be given to their research design and findings.

Research Studies from an Ethological Perspective

Research studies related to the study of young children may be organized into three main categories:

1. studies designed to observe specific motor patterns (Blurton Jones, 1967, and W. C. McGrew, 1969);
2. studies concerned with the investigation of dominance and its relationship to human social situations (Missakian and Hamer, 1974, and Strayer, F. F. and Strayer, J., 1976);
3. other studies using a naturalistic approach, more particularly, an approach in free-field situations (D. Patterson, 1976, J. McGuire, 1973, Smith and Green, 1975, and W. Hartup, 1974).

Studies related to specific motor patterns. In 1967, Blurton Jones conducted a study entitled "An Ethological Study of Some Aspects of Social Behavior of Children in Nursery School." His research represents an attempt to apply ethological methods of observation and interpretation to the study of human behavior in the same manner as Tinbergen (1953 and 1959), Moynikan (1955), and others who have studied the behavior of non-human primates.

Using a direct observational approach Blurton Jones collected information regarding specific aspects of the children's social behavior (responses to adults-teacher, strangers, and parents, agonistic behavior, and rough and tumble play) by specifically examining motor patterns. For example, in discussing agonistic behavior, Blurton Jones stated that among three to five year old children in nursery school settings, fights occur over property and little else.

In attempting to trace the development of aggressive behavior, Blurton Jones focused on chunks of behavior which he labelled 'rough and tumble play.' In his study, he described this behavior as consisting of seven movement patterns which tend to occur at the same time as each other and not to occur with other movements. This pattern of movements involved:

> running, chasing and fleeing; wrestling; jumping up and down with both feet together ('jumps'); beating at each other with an open hand without actually hitting ('open beat'); beating at each other with an object but not hitting; laughing. In addition, falling seems to be a regular part of this behavior, and if there is anything soft to land on children spend much time throwing themselves and each other on it (Blurton Jones, 1967, p. 357).

Despite the similarities that exist between hostile behavior and rough and tumble play, Blurton Jones distinguished them as being different by stating that in rough and tumble play,

> The players neither respond as if their playmates were hostile nor show any indication of their own motivation being hostile (i.e. of the causes of rough and tumble being at all related to the causes of fighting). Short-term effects of play are eventual exhaustion, continuing to stay with the playmates, seeking them out another time to play with. If anything, its short-term effect is to gain friends rather than to lose them (Blurton Jones, 1967, p. 359).

Results of the investigation of rough and tumble play indicated (in the age group studied) that there appeared to be a sex difference in the amount of rough and tumble play by children, males playing more often than females. Blurton Jones suggests in his concluding remarks that there might be a critical period for the development of rough and tumble play, ending before three years.

In his final discussion, Blurton Jones states that:

> the behavior of children in nursery school settings when greeting adults, fighting and fleeing, and in certain parts of their 'play' is readily analyzable into rather constant motor patterns (p. 367).[2]

W. C. McGrew's "An Ethological Study of Agonistic Behavior in Preschool Children" (1969) was a study designed specifically to examine the following subcategories of agonistic behavior: aggressive behavior (behavior which produces injury to or flight by the child to whom it is directed), fearful behavior (behavior by an aggressed-against child which reduces threat), and defensive behavior (behavior by an aggressed-against child which prevents attack by an aggressor without either attacking in return or fleeing). In this study, McGrew also attempted to examine quasi-agonistic or rough and tumble play which he defined as involving "vigorous, gross activity which does not result in injury or separation."

Observations were made of three to five year-old children (21 males, 9 females) in an Oxford city nursery school. The agonistic and quasi-agonistic behavior of preschool children was recorded using three types of data collection: remote audio-videotape, direct audiotape, and direct written recordings. Behavior between children was noted in 240 agonistic and quasi-agonistic interactions. Sixty non-agonistic encounters were noted for comparison. Before and after each encounter, the observers noted whether the children were together or separated, or whether the encounter was a continuation or indeterminable because of either factor. As well, the observers recorded which child initiated or terminated the interaction, which children were intruders or possessors, and which children were winners or losers. The behavioral elements recorded were then analyzed using a table (an 'ethogram' or 'behavior dictionary') constructed by McGrew which attempted to look at behavior in terms of such specific components as facial expressions (i.e. normal face, low frown, grin face, etc.), gestures (beat, punch, pat, etc.), postures (hug, body oppose, wrestle, etc.), and locomotion (run, walk, back, etc.).

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[2] Other human ethological studies conducted by Blurton Jones have investigated such topics as "An experiment on eyebrow raising and visual searching in children" (1970), "Ethological studies of child behaviors" (1972a), "Categories of child-child interaction" (1972b), "Behavior of children and their mothers at separation and greeting" (1972c), "Non-verbal communication in children" (1972d), "Criteria used in describing facial expressions of children" (1972e).

The findings of this study indicated that:

1. Most of the interactions were dyadic (involving two children).
2. The mean elapsed time of all interactions was 12.9 seconds for both nonagonistic and agonistic-quasiagonistic.
3. Males participated in a greater percentage of the interactions (nonagonistic and agonistic-quasiagonistic).
4. Thirty percent of the interactions (nonagonistic and agonistic-quasiagonistic) involved an object, usually a toy.
5. Children remained together significantly more often in nonagonistic encounters. 'Continuation' and

'other'-ending interactions were probably largely quasiagonistic.

6. Dominance ranking seemed related to the number of interactions initiated, a possible measure of leadership (W. C. McGrew, 1969, pp. 152-155).

The last finding, although in agreement with Esser (1968), is in direct contrast to the remarks made by Blurton Jones (1967). To quote Blurton Jones, "Dominance says nothing useful or instructive about the social organization of the class of three to five year olds I observed or of the groups within it" (p. 351).

Studies related to dominance and aggression. "Aggression and Dominance Relations in Young Children" (1974), represents an attempt by Missakian and Hamer to apply ethological methods of observation and analysis to the social behavior of preschool children. The focus of the study was on the aggression and dominance relations in peer groups of communally reared children ranging in age from seven months to four years. Observations occurred during free play situations in which there was a minimum of adult presence or interference. In addition to recording the aggressive and submissive behaviors in dyadic interactions, the observer maintained records of physical contact, the role of property in the interaction, and the location (indoors, outdoors) of the interactions. The findings may be summarized as follows:

1. Agonistic behavior revealed stable and linear dominance hierarchies for children from 6 months to 4 years.

2. There was a higher frequency of agonistic behavior between similar ranked children.

3. There were no sex differences in aggression frequency or positions in the dominance hierarchy.

4. Children did not fight exclusively or significantly over space/territory or possession of objects.

5. There was a positive correlation between dominance by rank, and submission, and a negative correlation between dominance by rank, and aggression. These correlations are virtually identical to correlation patterns reported for non-human primates (Rowell, 1974).

6. There was a positive correlation between dominance by rank, and age. However, this was not a perfect correlation in that younger children could be and were dominant to older children (Missakian and Hamer, 1974, p. 23).

These findings, while in agreement with many primate field studies, are in sharp contrast to previous studies of preschool nursery children. The long term contact that the children had with one another due to the communal arrangements (i. e. the children were exposed to all the members of the group on a daily basis, twenty-four hours each day) could possibly be responsible for the formation of such social grouping and hence the existence of the linear dominance hierarchy. Furthermore, finding number three is in sharp contrast to studies reviewed by Maccoby and Jacklin (1974). On the basis of an extensive review of the literature, Maccoby and Jacklin concluded that there were clear sex differences in aggression frequency and rank within the dominance hierarchy. In addition, finding number four is in disagreement with the Blurton Jones (1967) study whose results indicated that most aggression occurred over property (toys, equipment, etc.) or space.

As previously indicated, findings of this study, while often very similar to the research reports of free-living primates (Eibl-Eibesfeldt, 1975), are at times in sharp contrast to studies conducted specifically in the field of human ethology (cf. Blurton Jones, 1967 and Maccoby and Jacklin, 1974).

Strayer, F., and Strayer, J. (1976) attempted to clarify the social constructs of young children's behavior by applying ethological concepts and methods to the analysis of preschool conflict and dominance relations. Naturalistic observations of social conflicts (attacks, threats, and object/position struggles) of eighteen children varying in age from three to six years were collected during free-play periods using videotape equipment. Dominance relations were assessed through analysis of video records of naturally occurring conflict. The social agonism inventory was developed from repeated observation of videotape conflict episodes collected during the initial six weeks of observation. The social agonism inventory was organized into two main categories, these being initiated agonism and responses to initiated agonism. Each of these main categories was then subdivided into more specific forms of behavior, creating a behavioral dictionary. For example, initiated agonism consisted of three distinct categories: physical attack, threat gestures, and object/position struggles. Each of these distinct categories consisted of further subdivisions. For example, the physical attack category was comprised of six specific forms of initiated agonism - bite, case, hit, kick, push-pull, and wrestle.

In addition, Strayer and Strayer identified five main categories of responses to initiated agonism - submission, help seeking, counterattack, object/position loss, and no overt response. Each of these main categories were subdivided into more specific forms of behavior. For example, submission consisted of seven specific appeasement gestures: cry-scream, rapid flight, cringe, hand cover, flinch, withdraw, and request cessation.

Data was collected using a matrix-completion method (Altmann, 1974). In applying this procedure, the observer, rather than focusing in on a single child, scans the immediate environment for episodes of behavior as defined by the agonism inventory and then records those episodes.

Results of the study indicated that nearly 40% of the initiated agonistic episodes entailed some form of physical attack (hit, push, etc.). Threat gestures were the second most frequent type of initiated agonism (approximately one-third of the observations were scored in this category), and slightly more than one-quarter of all observations involved object/position struggles.

In analyzing the responses to initiated agonism, Strayer and Strayer found that help seeking occurred at a surprisingly low frequency. On these occasions, help was sought from one of the preschool teachers and not from another member of the group. Three of the remaining response categories, submission, object/position loss, and no response each comprised about one-quarter of the observed responses. Slightly more than one in five agonistic episodes involved counterattack by the target.

An analysis of dyadic agonistic behavior interactions revealed relatively rigid and stable dominance relations. These relations as outlined by Strayer and Strayer, conformed to a linear model of social dominance. Although there were sex differences in the frequency of initiated conflict, position in the dominance hierarchy (according to Strayer and Strayer) was not directly related to gender. Possible developmental changes in both agonism and dominance were discussed at the conclusion of the study. In addition, findings were related to comparative research on social ecology of nonhuman primates.

Studies utilizing a free-field approach. The purpose of Diane Patterson's (1976) study "Social Ecology and Social Behavior" was to clarify the relations between settings and behavior, that is, how it is that particular settings become associated with particular social interactions in young boys and girls. The investigation involved three studies.

The first study was designed to determine whether in a typical nursery school classroom, the play settings influenced the quality of children's social interactions. Twenty-five children ranging in age from four to five and one-half years were observed at four play centers (art, games, blocks, and dramatic play). Recorded interactions were classified into two broad categories, assertive-disruptive and positive-constructive. Findings from the first study indicated that differences in the kind of social interactions are a function of sex and setting (i. e. Boys were involved in most of the assertive interactions and these assertive interactions occurred more often in the block center than at the art center).

The purpose of the second study was to replicate and extend the first study. Observations were made of nineteen one and two year olds, all low-income Black children, and nineteen four and five year olds of a variety of racial and socioeconomic backgrounds in the same nursery school as the first study. The results for the four and five year olds were the same as the first study; more assertive interactions for boys than for girls and more assertive interactions in the block center. The total number of interactions with other children was greater for the older children than for the younger age group. The findings also indicated that assertive interactions were not significantly different for boys and girls at the younger level. No analysis of the effect of play setting could be made for the younger children as they did not typically use any toy very long and often were not using any toy when interactions occurred. The second study also suggested that the effects of setting and of sex emerge around the third or fourth year. As in the first study, the effect of setting was confounded with the sex effect for four and five year olds.

In an attempt to separate these variables, a third study was designed in which groups of boys and girls were observed separately with the experimenter controlling the toys (materials) available to the groups. In contrast to the previous naturalistic observations, children in this study were observed in two ten-minute sessions in groups of three (each group containing members of the same sex), in an experimental room equipped with art materials for one session, and blocks for the other session. The results indicated girls to exhibit less assertive behaviors than boys in both conditions and slightly less in art than in blocks. Contrary to what might have been expected, boys exhibited more assertive behavior with art materials than with blocks. Possible explanations for this finding include the following points:

> 1. Physical materials may set limits and constraints on activities, including social interactions.
>
> 2. Children are selectively drawn to materials that permit the type of behavior characteristic of them, in other words, settings may have a differential attractiveness to different kinds of children.
>
> 3. The controlling influence is in the interactions themselves; that is, children, and adults shape each other's behavior in the setting (Patterson, 1976, p. 4).

In summary, Patterson states that it appears that there is an effect of play setting on social interactions of four and five year olds. The effect may possibly be greater for boys than for girls and is probably defined through the interactions of children and adults in the setting. Redefinition appears to occur in a short time, if interactions with people in that setting are different from those expected.

John McGuire (1973) utilized a naturalistic time-sampling observational technique and a picture sociometric interview to study the relationship between aggressive behavior and social status among preschool children. Results of the investigation indicated that, overall, male nursery school children were more aggressive than female nursery school children. Although this finding has been well documented by researchers who have selected to use older children as subjects in their studies, it has received little direct verification in a naturalistic setting with preschool age children.

In addition, McGuire found that when only those children identified as being above the medium on the amount of aggression were observed, the following relationship between sex, social status, and amount of aggression was noted: highly aggressive male children tended to be unpopular rather than popular, while highly aggressive female children tended to be popular rather than unpopular. This finding seems to suggest that regardless of sex there is increasing popularity with increasing aggression up to some optimum level, followed by decreasing popularity with any further increases in aggression beyond that optimum level.

In conclusion, McGuire noted that in attempting to understand the relations between aggression and sociometric status among preschool age children, one must consider the powerful modifying effects that sex role differences have even at this early stage in the child's social development.

Smith and Green (1975) studied aggressive behavior in English nurseries and playgroups with respect to sex differences and response to adults. Observations were made by one of the authors who used an incident sampling procedure to collect the data on subjects ranging in age from two and one-half years to five years. Results of the study suggest that the higher incidence of aggressive behavior in boys, found in American nurseries, also holds true in England. In addition, the initiator of an aggressive encounter was likely to be successful if there was no adult interaction, but to be unsuccessful if an adult intervened. There was no consistent evidence that adults intervened differentially in boy-boy, boy-girl, and girl-girl encounters as indicated in a recent study by Serbin, O'Leary, Kent, and Tonick (1973).

This particular study not only confirmed the sex difference in aggressive behavior but also found a very much higher rate of teacher response to aggressive behavior in boys than in girls. The limited consistency across studies by differential responses by adults to boys' and girls' conflicts (according to Smith and Green) seems to suggest that sex difference is not caused by differential adult reinforcement in the preschool situation. Smith and Green conclude their study by stating that patterns of peer reinforcement and influences from outside the preschool situations (either biologically or culturally mediated) may be responsible for sex differences.

Willard Hartup's (1973) study represents one of the most thorough analysis of children's aggressive behavior which utilizes a naturalistic observational technique. Considerable attention will be given to this investigation as it forms the basis of the present study conducted by this investigator.

This report describes a naturalistic observational study concerned with the functions of aggression in children and how these functions change with age. The three developmental hypotheses as outlined by Hartup are as follows:

> 1. There is a greater proportion of hostile, "person-directed" aggression relative to "object-oriented," instrumental aggression in the interaction of grade school children than in the interactions of preschool children.
>
> 2. Threats to self-esteem lead more frequently to hostile attempts to injure the agent of frustration than to object-oriented aggression, particularly for older children.
>
> 3. Blocking is associated primarily with aggression which has instrumental value in gaining or preserving objects, territory, or privileges, and in which injury to the other person appears to be a secondary goal (Hartup, 1974, p. 337).

The study focused on six groups of children enrolled in a children's program in St. Paul, Minnesota. All groups involved in the study came from the lower socioeconomic strata of the city. The program activities, although not identical for each group, operated under a common philosophy. That is, all groups were "open" groups in the sense that the schedule permitted the children to have a range of choice among activities and minimal constraints on peer contact. One hundred and two children, 56 boys and 46 girls, were enrolled in these discrete age groupings. Sixty four were 4 through 6 years of age, and 38 were 6 through 7 years of age.

The method of observation was a combination of time and event sampling in which both aggressive and non-aggressive activities were recorded. As outlined by Hartup, the time sampling component was made up of two-minute periods, which governed the overall progression of the observation. One to five target children were observed during each two-minute segment and any one target of the observed targets was not focused in on again until all other children in the group had been observed. The procedure was modified to an event sampling strategy whenever an aggressive act occurred elsewhere in the room. The observers were instructed to record everything that the target child did during the two-minute observation. The detail varied somewhat with the events, in that, if the observer focused on subjects engaged in non-aggressive activities, he noted the behaviors and context in brief, general terms. However, if the observer focused in on an aggressive episode, the sequence was described in as much detail as possible.

In his study, Hartup defined aggressive events as,

> intentional physical and verbal responses that are directed toward an object or another person and that have the capacity to damage or injure physically and/ or psychologically (Hartup, 1973, p. 15).

The records collected by the observers were then rated on three different occasions by three pairs of coders. The first rating involved identifying all interactions which conformed to the definition of aggression. In the second step, the coders rated the nature of each aggressive act as either hostile (person-oriented), or instrumental (object-oriented). In the final step, the coders rated the particular function of the antecedent event and aggressive acts utilizing a behavioral inventory constructed by Hartup and his observers with the completion of the observational schedule. Nine categories ranging from injury and destruction of property to rejection, derogation, and defiant noncompliance were used to classify the aggression. Antecedent events were coded using eighteen categories, but for the purpose of this discussion, these categories have been collapsed into three:

(a) blocking (involving possessions, space, and activity);

(b) bodily contact;

(c) derogation (negative social comparisons, tattling, ridicule, criticism).

Although other topics were discussed in Hartup's original study, for the purpose of this report, the results will be discussed in terms of age, sex, and race comparisons.

Findings related to age (for both sexes) indicated that older children were less aggressive overall than the younger children. This finding (according to Hartup) is the clearest indication in the observational literature that aggression declines in the period immediately after early childhood. There was a significant Race x Age interaction in that among younger children, the rate of aggression for black and white children did not differ, but the older black children were significantly more aggressive than the older white subjects. As expected, instrumental aggression occurred significantly more frequently among the younger children. A significant Race x Age interaction was derived from instrumental aggression in that although there was no race difference in instrumental aggressive activity among the younger children, the older black children showed more aggression of this type than did the other white children. In analyzing hostile aggression, Hartup found that a significantly higher percentage of aggression was classified as being hostile among the older subjects than among the younger subjects.

Aggression was examined next in terms of the two following criteria: those aggressive acts elicited by blocking and those elicited by bodily contact. Findings from this analysis indicated that blocking produced a significantly higher percentage of instrumental aggression among the younger children than among the older children. For aggression produced by bodily contact, the findings indicated that there was no significant difference between younger and older children in percentage rated as hostile or instrumental.

In analyzing the data further, a clear age difference was found, for example, in the type of hostile behavior which is elicited by derogation. Results indicated that for younger children, when such antecedents elicited hostile outbursts, half took the form of bodily injury (hitting) and half consisted of reciprocated derogation, threats and tattling. However, among the older children derogation showed a tendency to produce a reciprocal derogation; only 22% of hostile responses to derogation involved hitting, while 78% involved some type of insult, or reciprocated threat to self-esteem. A parallel age difference in types of hostile aggression was not found in the aggression elicited by blocking. Findings indicated that about 25% of blocking produced hostility involving derogation, rejection, tattling and threats for each age group. In summary then, when children are insulted and the insult leads to aggression, the likelihood of insulting retaliation is very great for older children (elementary school children) and very unlikely for younger children (preschool children). On the other hand, when either older or younger children are blocked, the proportion of insulting hostile reactions does not vary with either age grouping.

In the analysis of the sex factor, it was found that male subjects were more aggressive totally than female subjects. According to Hartup, this difference was primarily due to a sex difference in the incidence of hostile aggression, in that no significant sex difference was obtained in the rate of occurrence of instrumental aggression. An additional, yet important finding indicated that none of the functional analysis (analysis relating the nature of aggressive outbursts to the nature of the antecedent) revealed any significant sex differences. In other words, there was no evidence that suggested that boys and girls are "wired" differently with respect to the operation of hostile and instrumental aggression.

As previously indicated, analysis of the race factor found that more frequent total aggression was observed among older black children than among older white children, owing primarily to the higher incidence of instrumental aggression in the former group. As with sex, the results indicated that the functional properties of the aggression in the interactions of the black children did not differ from those of the white children in the study. Hence, it can be stated that the patterning of antecedents for hostile aggression and the elicitors of instrumental aggression were not different for the white and black samples.

In summary, as indicated by Hartup (1973), the results of the investigation lend support to two hypotheses:

> (a) The developmental course of human aggression may best be understood by means of a differentiated "functional analysis" of the problem;
>
> (b) The distinction between instrumental and hostile aggression is heuristically valuable for studying the functions (This word implies the question, How does aggression work?) of aggression in early childhood, even though it may have more limited usefulness in studies of adolescent or adult aggression (Hartup, 1973, p. 21).

Summary of the Chapter

In this chapter, a comprehensive overview was attempted of the respective theories of aggression. In the first section, a review of the various theories of aggression was presented. The psychoanalytic theory as illustrated by Freud was discussed. This was followed, in turn, by the frustration-aggression hypothesis as described by such theories as Bandura and Walters (1963), Dollard and Miller (1939), and Berkowitz (1962).

The second part of this chapter presented the ethological approach to the study of behavior (specifically aggressive behavior) from a historical perspective using the research conducted by Lorenz (1966), and Ardrey (1961), theorists who attempted to construct a link between the study of human primates and non-human primates.

The last section of the chapter was devoted to the selection and discussion of the most recent studies investigated from an ethological perspective in terms of three categories:

(a) studies designed to observe specific motor patterns (Blurton Jones, 1967, and W. C. McGrew, 1969);

(b) studies concerned with the investigation of dominance and its relationship to human social situations (Missakian and Hamer, 1974, and Strayer, F. F., and Strayer, J., 1976);

(c) other studies using a naturalistic approach (D. Patterson, 1976, J. McGuire, 1973, and Smith and Green, 1975).

Finally, Hartup's (1973) study was examined in detail as it provided the theoretical framework upon which this study was based.

CHAPTER III

THE DESIGN OF THE STUDY

In this chapter, the design of the study is described, including the selection of the sample, the procedures followed, the system of categories used to analyze the data, the pilot study, the main study, and the steps followed in analyzing the data.

The Sample

The subjects involved in this study consisted of twenty-one children ranging in age from four and one-half to five and one-half years. The children were enrolled in one kindergarten program located in a classroom of an elementary school in a large urban setting. The school was selected by the supervisory staff of the school board for use in this study. The children were under the supervision of one teacher with parents acting as aides on a daily basis.[1] The program was "open" in the sense that the schedule permitted the children to select from a range of center-based activities with minimal adult constraints and/or interference for approximately one hour each day.

Procedure

Summary of Method

The strategy chosen for this study involved naturalistic observation (after Hartup, 1973).[2] Observations were conducted over a six-week period, two weeks being allotted to the pilot study and a period of approximately one month being allotted to the main study. The method of observation was a combination of time and event sampling in which both aggressive and non-aggressive activities were recorded. The time sampling procedure governed the overall progression of the observations. During each observational session, the behavior of half the children within the classroom was described as it occurred and recorded for further analysis using a tape recorder. The behavior of each child was observed every other day for a period of two minutes. An extension of this time period occurred only when the target child (the child being observed) was involved in an aggressive sequence. In the extended observations, the observer continued to record until the aggressive sequence ended or until the two minute period designated as a rest period had been used up and the next two minute observational sequence was scheduled to begin. The duration of the aggressive act was then noted. A schedule was designed to ensure that the children's behavior was observed on a random basis.

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[1] Parents served as aids whenever they had free time.

General Procedure

Although the general procedure is not unlike the methodological procedures noted in the previous section, there are some added features. These are as follows:

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[2] The author is indebted to W. Hartup for supplying a copy of the sampling technique used in Hartup's own studies at the University of Minnesota. Many of the sampling procedures of his research have been used in this study.

1. The observations were conducted on a daily basis during the activity period scheduled between the hours of 9:30 and 10:30 A. M.
2. Each child's behavior was recorded on a scheduled basis. Each observational time sample was two minutes in length followed by a two minute rest period. When the target child became involved in an aggressive sequence toward the end of a two minute observational interval, an extension of the time period was necessary (as was previously stated). This extension was not carried beyond two minutes, the length of the rest period.
3. When the child being observed (the target) left to go to another play area, the observer followed and continued to record the behavior. If the target child left the room, the observation was terminated and deleted from the analysis. When a child scheduled to be observed was absent, or late entering the classroom, no observations were recorded during that two minute interval.
4. When the target child was interacting with other children, the observer focussed on the target, recording any interactions that the target child had with the other children as well as any interactions that occurred between the other children and the target child.

Information Obtained During the Course of the Observation

The observer recorded the child's name, the date, the time, the location, and the names of the children and/or adults who were engaged in the same activity or were, for some reason, close by. The activity that the child was participating in was described. As well, mention was made of the approach and departure of other children from the group and/or activity. During the two minute observational interval, the observer recorded all the social elements of the ongoing activity (e.g., verbal and physical interactions).

In recording an aggressive event, the observer recorded the following information:

1. The components of the aggressive act(s) such as facial expressions, intensity, accompanying verbalization as well as the physical behaviors.
2. What occurred just prior to the act, i.e., the context within which the act occurred.
3. The behavior of the victim.

The observer recorded all of these features in some detail in order that at a future time, reliable judgments could be made with regard to selecting and analyzing the aggressive behavior.

Guidelines Used to Assist in the Identification of Aggressive Behavior

Determining what is aggressive. In identifying aggressive behavior, the investigator used the following criteria as a guide:

1. That the act was intentional (vs accidental);

2. That there was a target, object or person;
3. That the act had the capacity to injure or damage physically and/or psychologically.

In analyzing the data for specific behaviors which could be identified as aggressive, the investigator used the following descriptors as a guide:

Descriptors of aggressive behavior

1. Physical attack on person or object:
    - (a) hitting, kicking, slapping, biting, pushing, pinching, grabbing another;
    - (b) grabbing, breaking, or attempting to damage possessions of another;
    - (c) above behaviors used to defend against or retaliate for aggression, or to defend one's property;
    - (d) negative attention seeking: teasing or annoying behaviors. For example, shadow boxing, jumping at or around another, repretitive physical behavior such as waving hands in the face.
2. Physical insult behavior:
    - (a) spitting, hand signals, body motions.
3. Resisting behavior:
    - (a) twisting away, running away, fighting against - most often in response to teacher directives.

4. Physical threats:
    (a) chasing, threats to hit, kick, slap, etc.
5. Verbal attack:
    (a) name calling, teasing, negative criticism of another's work or person, ridicule; all statements which are demeaning, derogatory, or insulting;
    (b) threats of physical aggression;
    (c) tattling, false accusations, blaming.
6. Rejection:
    (a) interpersonal: "I don't like you," "You're not my friend;"
    (b) refusal to allow entry to an activity or play space: "Get out of here," "You're not playing;"
    (c) hostile refusal to share an object or materials: refusal must be accompanied by physical or verbal aggression.

Qualifications and conventions regarding observations made. Given these categories, the observer still had to make judgments about the behavior observed:

1. Whether a behavior fit into one of the categories and could thus be described as aggressive; and
2. Whether these behavioral categories were aggressive under all circumstances.

To help make these decisions, several qualifications and conventions were used by the observer:

1. Context: If the behaviors were exhibited in what was clearly aggressive play, participated in with the consent of both children, it was not described as aggressive behavior. Examples of aggressive play would be wrestling on a gym mat; play fighting during role play, monster or giant games; or fantasy aggression as in doll or other object play. The observer attended to these highly active games for play could easily turn hostile, and the interactions become more intense, often signaled by verbal cues like "Stop that, I don't want to fight any more," etc. In the case of object aggression, if the object did not specifically belong to someone, and the attack was not forceful enough to break or damage the object, it was not counted aggressive. Threats, like chasing, occurred in games with high frequency. Chasing generally was not considered aggressive unless it followed an aggressive act: Billy hit Ronnie, Ronnie chased Billy.

   Derogatory behaviors, such as spitting, throwing sand, verbal insults, etc. that occurred in isolation were not considered aggressive. These behaviors had to be directed at another person. Rejecting behavior was also considered in context. For example, a child's refusal to allow another child to participate in an activity was not considered aggressive when the game or activity was necessarily limited to a certain number of players. Statements like "Only two can play," or "You can't play" was considered within the context of the situation. If the child was involved in a two-man game, then he was simply stating a fact. But if he was playing a game where participation was unlimited, where another child could just as easily be incorporated as not, then the child could possibly have been rejecting the newcomer. Such exchanges were recorded, but the circumstances were clearly defined so that the coders who later rated the protocols would be able to make informed decisions.

2. Intensity: The force with which a behavior was carried out was used as a measure of its aggressiveness. Intensity was judged by actual force of, for example, bodily contact with the hand (tap vs closed-fist sock) as well as by accompanying cues such as facial expressions and verbal behavior. In some cases, intensity superceded the contextual cues if the contextual cues of the aggressive act were more intense than seemed reasonable for the circumstances. Thus, if a child was socking another, was red faced and grimacing, and was shouting insults, then the observer was justified in describing the act as aggressive even though it may have occurred while the children

were playing a game.

With specific behaviors, intensity was a very important factor in distinguishing between an aggressive and a non-aggressive act. For example, one child taking another child's possession occurred with high frequency, but not always with the same force; in some cases it was aggressive, in others it was not. Much of the time, a "take" was very matter-of-fact, executed with ease and with a minimum of disturbance. A grab, however, was a forceful, aggressive "take" generally executed with a wrenching motion and resisted by the "takee." In a second example, noncompliance, intensity of response was the sole condition for inclusion as an aggressive behavior. Noncompliance was accompanied by active physical resistance or screaming or insulting language to be called aggressive.

The intensity or quality of any verbal behavior determined whether it was aggressive. Intensity was displayed in the child's voice level (shouting or normal); in his tone (belittling, scornful, critical or conversational) and in his choice of words. For example, when a child refused to share a toy with another child, it was generally considered assertive rather than aggressive unless the child screamed at the other, insulted him ("You are too dumb"), or called him a name when refusing ("It's mine, dumb idiot").

Finally, mild or assertive verbal behavior could be intensified by physical behavior, and become an important part of an aggressive sequence. Thus simple refusal to share, "No, you can't play with my toys" was aggressive when the speaker intensified his response by shoving the other and grabbing the toy. The verbal information was very important to obtain for without it, a coder would not know what the aggressor was rejecting instead of simply usurping the object.

3. Behavior of the victim: As a general rule, the observer attempted to judge the intent of a child's behavior with regard for the response of the victim when describing social interaction of any kind. When a victim cried, it would be very easy to infer that what was really a tap, might have been a hit. On the other hand, laughter following an aggressive sequence, did not necessarily mean that the aggressor and the target were playing a game. Laughter, particularly if emitted by the victim, was not to be relied on for a decision about aggressivity. The observer recorded, as objectively and fully as he could, the behavior of both the aggressor and the victim without letting one influence what was recorded about the other.

3. Language: In the cases where the observer made judgments about the aggressivity of a sequence while watching a target

child, the sequence appeared in some form in the observation, regardless of the decision. At this point, it was important that the observer clearly differentiate through the language of his protocol, what was aggressive and what was not considered aggressive, for there was another level of judgment imposed on the protocol by the coders. The language of the record was as unambiguous as possible. Whenever possible, simple action words were used. These action words were clearly aggressive or clearly non-aggressive, e.g., hit vs tap, slap vs touch. Other words which were more expressive and conveyed the intensity of the behavior were used also, such as "whack" or "whallop" or "slug", all forms of intense hits. When language was apt to be less clear, modifiers were used.

4. Sequencing: For accurate representation and consequently, accurate coding of the observed behavior, it was important that the observers' records retained the sequence of the events. The tendency to sum up behavior when divisions could readily be made was avoided. Making inferences, even after the fact, was avoided as well. The judgments about motivation or intensity could be inaccurate. When a series of acts occurred so rapidly that the observer lost track of the number and progression, an attempt was made to retain the instigation, the aggressor, the victim, the

dynamics of the interaction and the resolution. For example, if two children were fighting the observer described into the tape recorder how it started, and who threw the first punch. After that, the observer made sure that the parts played by each child were somehow represented, whether generally or specifically.

System of Categories

The system of categories included the following sections:

Categories for Coding Aggressive Behavior as Either Hostile or Instrumental
Categories for Describing the Aggressive Act
Categories for Coding the Primary Function of the Aggressive Act
Categories for Describing Antecedent Event Behavior
Categories for Coding the Primary Function of the Antecedent Events

Additional categories were devised to obtain information pertaining to group size, sex, and context.

Coding Hostile and Instrumental Aggression

Hostile aggression was defined as injury for the purpose of injury. In order for an aggressive act to be classified as being hostile, there must have been some evidence of self-other reference, reference to competence, status, acceptance, self-esteem, or physical injury unmotivated by instrumental goals. On the other hand, instrumental aggression was viewed as aggression in the service of acquisition of territory, possession, or privileges.

In coding the aggressive acts, two conventions were employed. If in the transcript (recording) no mention was made of toys, space, or activity, the act was coded as hostile. When toys, or space was mentioned, the code instrumental was used only if the aggression was aimed at usurpation thus excluding cases where the object was used as a weapon.

Categories for Describing the Aggressive Act

The following categories were used to describe the physical or verbal behavior of the aggressive act. The examples are not exhaustive. When the observer found descriptive words that were not included in the list, he tried to place them in the most appropriate category. Category 13 (not ascertainable) was used only when the behavior had not been adequately described.

1. Hit, punch, poke, push, sock, shove, kick, beat up, swat at, whack, wrestle, slap, swing at, beat, collar, splash, throw, struggle, fight, etc. All words which described high intensity, large muscle movements. Running after, and chasing would also fall into this category.
2. Pinch, bite, pull hair, scratch, etc. These words depicted smaller muscle movements, but, more intensely hostile aggressive behaviors. Unlike the general flailing quality

of the first category, these acts were more localized, deliberate, and had a meaner quality about them.

3. Grab, snatch, swipe, hold on, tug. All words that denoted aggressive taking or retaining behavior.
4. Name calling. Common ones: sucker, dummy, fucker, stupid. Any word would qualify if used to label another derogatorily.
5. Tease or taunt. Repetitive noises, chanting of the "na-na-na-na-na" quality, jumping at, dancing around in a threatening manner were examples. Any repetitive physical or verbal behavior that was clearly annoying to the target was considered a tease or a taunt.
6. Insult, ridicule, epithets, spitting, sticking out tongue, and other physical acts of derogation. All derogation that was directed at the target personally, rather than at something he was doing, playing with, or working on.
7. Negative criticism. Negative comments about another's work ("That's ishy" was typical) or possessions or activity were included in this category.
8. Refusal to share objects or space. This category was primarily used for statements of refusal such as "Get out of here." Physical behaviors which appeared to be refusals were coded for their physical quality rather than the inferred intent of the aggressor.

9. Exclusion from the play group or activity, blocking path. The protocol described such verbal exclusions as: "You can't play," "boys can't come into the house" or physical exclusions: standing in another's way to prevent him from joining the group.
10. Denial of liking or friendship. "I don't like you." "You're not my friend." "I won't be your friend."
11. Tell on, accuse, transfer blame to another.
12. Command aggression. For example, one child telling another child to execute an aggressive act.
13. Not ascertainable. When the description of the aggressive act was not clear, or was impossible to fit into any of the above categories, it was coded as 13. This category was used only when there was no other choice.

Categories for Coding the Primary Function of the Aggressive Act

It was assumed that every aggressive act had a function in the interaction between the target and the aggressor. The function was determined from the categories below:

1. Bodily injury. Aggressive acts which fell into this category seemed to serve no other function than to inflict injury or to avenge an injury. For example, Child A approaches Child B who is sitting in his locker and talks to him about the weather. Child B kicks Child A. Child A then hits Child B. As far as we know, Child B was not

provoked into kicking Child A. The kick functioned to inflict bodily injury. Child A, in retaliating, was also trying to inflict injury upon Child B.

2. Destruction of property. All attempts to damage, as well as actual destruction of property, were included here. For example, pounding a fist against something, throwing something down on the floor, as well as kicking something apart, or tearing something up, etc.
3. Aversive interference in activity. This category was reserved for aggressive acts which functioned to interrupt another child's ongoing activity. The activity had to be described and the victim had to be involved in an activity such as a game, role play, puzzles, table activities, reading books, etc., when he was interrupted. When the victim was simply standing around, wandering, or moving to an activity, he was not engaged in an activity as defined. Any physical interference in this circumstance was coded Bodily Injury. Interferences in the aggressive activity of another child, also did not qualify for inclusion in this category.
4. Usurp or regain object or space. This category was used whenever a child used aggression to acquire (or attempt to acquire) or retrieve a possession or play area.
5. Blame or Tattle. Accusations, transferring blame to another, and telling the teacher were considered aggressive

when unjustified, when unsolicited by the teacher, or when a child uninvolved in the incident did the telling.

6. Rejection. There are three sub-functions within this category:

   (a) The child rejected another by verbally refusing to share an object or a space.

   (b) The child rejected by excluding another from his play group or activity.

   (c) The child rejected another personally with no reference to objects, space, or activity.

   With the exception of exclusion from play group, the rejection was most often expressed verbally. Physical behavior often appeared rejecting (grabbing a toy back, holding on to a requested object, pushing another away). However, to code such aggression as rejection, required an inference on the coder's part. In such cases, the coder relied on the descriptive nature of the act and tried not to guess the probable motivation for the behavior. Physical acts of exclusion from a play group or an activity were more clearly expressed by such behaviors as blocking an entering child's path, pushing an intruder out, etc. This category was used cautiously. Whenever the coder was in doubt, he relied on the description of the behavior to select the function.

7. Derogation. This category referred to both physical and verbal acts which functioned to demean, criticize, or tease another child.

8. Threats. All threats of the foregoing behaviors were included in this category. The distinction among kinds of threats were made at the descriptive level.

9. Defiant noncompliance. When a child actively resisted complying with a command or directive, or struggled against another's physical efforts to make him comply, it was coded as defiant noncompliance. This category, particularly applied to defiance of teacher directives, although it occasionally applied to peer directives. The coder was careful when applying this category to defiance of peer directives. For example, resistance to another child's command to give up possessions, space or activity ("Give me that," "Let me in," "I'm gonna play") was not coded as defiant noncompliance. However, a child who persisted in annoying another after being told to stop by the victim was considered to be defiant noncompliant.

Categories for Describing Antecedent Event Behaviors

The categories below represented examples of the discrete verbal and/or physical behaviors of the antecedent event. These categories were all-inclusive. When a new descriptor was encountered, it was compared to the categories listed here and slotted into the most appropriate one.

1. Mild physical contact. This included all behaviors that, in general, were considered aggressive, such as touches, taps, holding hands, brushing against. It also included higher intensity behaviors which were qualified by adverbs such as softly, gently, lightly, etc.
2. More intense physical contact. All those physical behaviors observed as being more intense than the behaviors in the first category, e.g. pinch, bite.
3. Possessing, occupying, doing. This was passive, solitary, nonprovocative play, e.g. holding a doll, standing in a corner, working a puzzle.
4. Taking, entering, approaching. These were behaviors which connoted interactions with another child, but were mild behaviors. In the case of taking the object, etc., it had to be in the possession or vicinity of another child. If the object was, for example, on a shelf and a child took it, the event was coded 3 rather than 4 as there was no involvement with another child. Similarly, the approach and entry had to involve areas or activities which were already occupied by other children.
5. Grab, snatch, swipe, hold on, tug, invade, interfere, pull. These behaviors were the aggressive counterparts of the behaviors in the above category. These words implied more in-

tense acquisition and retention behaviors.

6. Compete. This was competition between two children for a possession, space, or activity. Examples would be two children running to claim a single swing, or arguing over something, etc.

7. Requests possession, space, participation. The child had to directly ask for an object, to enter a space or join an activity. For example, knocking on the door was coded as a physical request to enter.

8. "No" and other verbal prohibitions or refusals. This category was limited to verbal refusal. There had to be a statement of refusal to qualify.

9. Name calling. In addition to the derogatory names listed in the aggression category, more mild forms of name calling were coded 9, even a child's given name.

10. Teasing and taunting. Any repetitive physical or verbal behavior was judged annoying. Examples would include repetitive noises, chanting, jumping at, dancing around, etc.

11. Insult, ridicule, physical acts of derogation. Verbal insult and ridicule were defined as statements directed at the child about himself, or persons which had special meaning for him (e. g., parents, siblings, best friends, animals, etc.) rather than directed at his work or possessions.

Statements like "You're ishy," "My father is stronger than yours," "You're dumb," "You're only three," might be personally insulting to the child. If the referent was not personal, but concerned work, materials, possessions, etc., then it was coded as negative criticism (see below). Physical acts of insult were typified by hand signs, spitting, sticking out tongue and the like.

12. Denials of friendship or liking. Examples: "I don't like you," "You're not my friend," "I won't be your friend."
13. Tells on or accuses. Whenever a child told the teacher about the behavior of another. Also a child telling a peer about another.
14. Commands aggression. One child telling another to execute the aggressive act: "Hit him."
15. Negative criticism. This category described statements that were directed at another's work, materials or possessions: "That isn't a very good job," "That's ishy," "Yours is ishy." When the reference was personal and did not refer to an object, etc., it was coded as Insult (category 11).
16. Mild verbalizations. All other verbalizations which could not be coded in categories 7-15.

Categories for Coding the Primary Functions of the Antecedent Events

The categories described below represented the possible roles an antecedent event could play in a given aggressive interaction. The observer attempted to fit all antecedent events into one of the categories between 1 and 17. Category 18 was used only when it was impossible to determine a function for the antecedent event.

1. Blocking possessions. Anyone handling or playing with any object was considered by the observer to be potentially blocking another child's use of that object. Both active and passive play could result in blocking. The observer included those situations where an individual:
    (a) was quietly playing with an object;
    (b) tried to take, grab, break, or damage another's object;
    (c) requested use, possession, or sharing of an object;
    (d) refused to share, allow use of, or gave up an object.
2. Blocking space. This category included behavior ranging from passive occupation of space to active intrusion into another's territory. More specifically, this category was used when the provocateur:
    (a) occupied a space, e.g. "in the ~~house," "~~standing in the middle of the room," "on the floor," etc.;
    (b) approached, entered, or invaded another's space;
    (c) requested entry, e.g. "Can I come in?" or knocked on the door;
    (d) refused entry to another; blocks the path of another.
3. Blocking activity. Behaviors fitting into this category included solitary play to highly active, cooperative play. A

child playing a quiet game of solitaire would be considered as an example of blocking another who might want to play the same game. As well, a child who interrupted a 4-square ball game was identified as blocking the activity of those who were playing. In most cases, the activity had to be directly stated before the coder could be certain that the category applied. An exception to this was the word "playing." For example, if one child was "playing" with another, he was engaged in an activity, although unnamed. So if a third child approached the two who were "playing" and asked to "play" with them, he was potentially blocking their activity. However, if one child was "playing in the doll house," and another child "entered the house," the entry blocked the playing child's space. When "playing" was unqualified by location or name of activity or object as in "He was playing with Tommy," it was coded as Blocking activity.

All antecedent events which depicted a provocateur were included:

(a) quietly participating in an activity;

(b) entering into or intruding on an activity;

(c) requesting to participate in an activity.

Group Rules: (4) Violation, (5) Assertion. Group rules referred to rules which were established by the teacher as classroom rules, children's rules for games, or arbitrary rules which were established at whim. These were rules which applied to the school situation, rather than unspoken social rules such as rules about property rights, aggression, courtesy, etc. Violation of unspoken rules were coded in other categories. However, if a child asserted (spoke) the moral rule, e.g., "You're not supposed to hit," then it was coded 5.

Examples of Violation: The child who painted on the table was violating a classroom rule. The child who stepped over the line in a four-square game was violating the rules of the game. The child who hopped on the wrong foot in Follow-the-leader was violating the rule set up by that particular leader.

Examples of Assertion: "Don't paint on the table," "You can't step over the line," "You're out, you have to hop on the other foot," "Here's the way to make a T."

6. Provision of rg-sg. This category referred to those behaviors which functioned to encourage the aggressor to initiate or continue his aggression. These were victim-like responses. For example, a child who was crying may have encouraged the taunting "Cry baby" from another. A child who said, "Don't anybody get me" was very likely to

be "gotten." (However, "Betcha can't catch me," was an open invitation which challenged the aggressor to match his skill -- it was more of a derogation -- "You don't have the ability to catch." See category 10.)

7. Provision of model. The behavior of the provocateur in the antecedent event became a model for the aggressor. The behaviors may or may not have been aggressive themselves.

Bodily Contact: (8) Accidental, (9) Deliberate. Any form of contact from a soft touch to a violent kick was included in the bodily contact categories. Intensity was not distinguished. The contact did not need to be made by another person. An object falling and hitting a child on the head was still considered to be bodily contact. If the contact was clearly accidental, it was coded as 8. When the contact was deliberate, it was coded as 9.

10. Derogation and social comparison. In addition to physical or verbal acts which insulted, demeaned, criticized or teased another, all forms of comparative statements were included in this category whether hostile or not. The object of the comparison had to be stated, e.g. "You're taller than I am" qualifies but "You're taller," did not.

11. Blames, Tattles. Any accusation, blame, or telling the teacher on another was coded 11.

Threats: (12 - 16). Physical and verbal threats were broken down according to function. The explanation of the threatened behavior was held as described in the following categories.

12. Threaten blocking. Included all three types of blocking (possessions, space, activity).

13. Threaten bodily contact.

14. Threaten derogation.

15. Threaten to tattle.

16. Threaten interpersonal rejection (see below).

17. Interpersonal rejection. This category included only those rejections which were directed at a child personally. There was to be no reference made to possession, activity or space. Included were phrases like: "We don't want to play with you," "I don't like you," "You're not my friend." Statements which excluded a child from a space, a specific activity, or from having or using an object were not included. The following were considered to be examples of blocking: "Get out of here" (space); "You can't have the car" (possessions); "You aren't playing tag" (activity); "Only two can play cars" (activity). The activity, space or possession did not need to be included in the rejection statement itself as long as it appeared in the text of the sequence. If reference to possession, space or activity

was made within the sequence of the event, rejection was not coded as interpersonal. Interpersonal rejection implied that the provocateur was excluding the child because the child was the person he was, not because of another issue such as the amount of space available for play, etc.

18. Other. Antecedent events were placed in this category only when it was impossible to fit them elsewhere.

The Pilot Study

A pilot study was conducted in February, 1977, among twenty-one children not subsequently involved in the main study. The pilot study was undertaken for the following reasons:

To establish a procedure for observing children;

To determine the feasibility of using a tape recorder to collect samples of the children's behavior;

To determine the segment of time required to select a meaningful sample of the target child's behavior without disrupting the continuity of the activity engaged in by the child/children;

To organize a procedure for implementing an inter-observer reliability check;

To determine whether or not the observer would be able to collect information on the role that the teacher plays in dealing with aggressive episodes;

To determine if it would be possible to identify home variables which could possibly influence the aggressive behavior of the children in the classroom setting;

To make decisions with regards to such events as absenteeism, late arrivals, departures from the classroom, extending the observation in the event of an aggressive episode occurring toward the end of a two-minute segment, and the number of children to be observed each day;

To establish a procedure for analyzing the data.

The pilot study resulted in the following decisions:

A procedure for observing the children was established which could be used in the main study.

It was decided that a tape recorder could be used to collect meaningful samples of the children's behavior.

A two-minute observational segment followed by a two-minute rest period was established to collect samples of the children's behavior (after Hartup, 1973). Hartup was of the opinion that a two-minute observational period would enable the observer to get a meaningful sample of what the child was doing and at the same time be short enough so as not to disrupt the continuity of the group's activities.

A procedure for implementing inter-observer reliability check was established (See Appendix A).

It was decided that the observer would not be able to collect information on the role that the teacher plays in dealing with aggressive episodes.

It was decided that it would not be possible to identify home variables which could possibly influence the aggressive behavior of the children in the classroom setting.

It was decided not to deviate from the time schedule in the event of a target child being late entering the classroom, being absent, or departing from the classroom. If a situation arose where the target child became involved in an aggressive sequence toward the end of a two minute segment, the observation would be extended until the aggressive sequence ended or until the segment of time (two minutes) allotted to the rest period had been used. With approximately one hour being allotted to "free play" each day, it was decided that it would be possible to observe approximately half of the class daily.

In analyzing the pilot data, it was decided that each two minute segment would be divided up into eight fifteen second intervals. Each fifteen second interval would then be scrutinized using Hartup's system of categories. The decision to divide each two minute segment into eight fifteen second intervals was based on a finding in McGrew's (1969) study. This particular finding indicated that the mean elapsed time of all interactions of children three and four years of age was 12.9 seconds. Since the children in this study were slightly older (four and one-half to five and one-half years of age) the time period was extended to 15 seconds.

The Main Observational Study

The main observational study was conducted between February 28 and March 25, 1977. The investigator carried out the previously designed observational study with the assistance of a colleague who participated in establishing inter-observer reliability. The percentage of agreement between the two observers was 92.66 percent (See Appendix A), which was considered acceptable.

In addition to establishing inter-observer reliability, an inter-coder reliability check was undertaken when the observational data had been collected. In phase one of this check, aggressive versus non-aggressive behavior was analyzed. The percentage of agreement in this phase was 95.41 percent. In phase two, more specific categories of aggressive behavior were analyzed (See Appendix B). The percentage of agreement in this phase ranged from 85.71 percent (antecedent events by function) to 95.83 percent (hostile versus instrumental aggression). Hence reliability of coding (in both phase one and phase two) was established as well.

Upon the completion of the analysis of "real" aggression, the investigator spent some time looking at interactions involving "playful" aggression.

Steps Followed in Analyzing the Data

Initially the recordings were transcribed and divided into fifteen second intervals. The observer then acting as a coder went through all of the transcriptions and identified all of the interactions within each fifteen second interval that conformed to the definition of aggression. The next task was to classify each aggressive act as either hostile (person-directed) or instrumental (object-oriented). The aggressive acts were then coded according to specific description and function. Antecedent events were also classified according to description and function. The final step involved analyzing the aggressive behavior according to sex, context, and group size.

Summary of the Chapter

This chapter has described the design of the study with its several parts consisting of the sample, the procedure, the system of categories, the pilot study, the main study, and the analysis of the data.

CHAPTER IV

RESULTS OF THE INVESTIGATION

This chapter presents the results of the analysis associated with each of the research questions along with additional findings related to such variables as group size, context, the behavior of individual children and "playful" aggression. The following procedures were followed in analyzing the data:

1. The investigator recorded observations over a period of 14 days.
2. There were 21 children involved in the observational study.
3. The investigator observed 10 or 11 children each day.
4. The number of segments of actual observation every two days totalled 21. Each segment was of two minutes duration.
5. Over a period of 14 days, 147 (21 x 7) segments of observation were collected.
6. The amount of segments lost to absenteeism, late arrivals, and departures from the classroom totalled 17.
7. The number of segments of observation less the number of segments lost to absenteeism, etc. totalled 130 (147 - 17).
8. A total of 1050 intervals of observed behavior were analyzed. Each interval of observed behavior was of a 15 second duration. When intervals of aggressive behavior that took place

during the extended time periods were not included, 1040 intervals of aggressive behavior were analyzed. The one interval of behavior noted below (see #10), involved a fifteen second interval of non-aggressive behavior which occurred during the extended time period.

9. The number of intervals of aggressive behavior including those collected during the extended time period totalled 99.

10. On 9 occasions, the investigator extended the time sampling procedure to include aggressive behavior in progress. During 8 of these occasions, the aggressive behavior occurred in the 9th interval (the interval immediately following the two minute segment). On one occasion, the aggressive behavior did not occur until the 10th interval.[1] This being the case, aggressive behavior occurred on 9 occasions during the extended time periods.

11. The actual number of intervals of aggressive behavior totalled 90 (99 - 9). The aggressive behavior observed was analyzed on the basis of specific time intervals (fifteen second intervals) for a total time of two minutes. This procedure was altered only when the extended time period had been utilized. When this occurred the observations collected during the extended time periods were analyzed

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[1] For this particular segment of recorded behavior, the previous interval was categorized as an antecedent form of behavior which led to the aggressive behavior recorded in the tenth and eleventh intervals.

on the basis of fifteen second time intervals as well.

12. The total number of acts of aggressive behavior came to 136. Acts of aggressive behavior were identified within the fifteen second interval.

13. The data was sorted and analyzed in two different ways. First, in order to estimate the proportion of time children engaged in aggressive activity, each two minute segment was divided into 15 second intervals. Then, each interval was coded and the frequency of intervals was tallied. Second, in order to examine and describe the actual type of aggressive behavior, each two minute observational segment was divided into aggressive and non-aggressive acts. Then the aggressive acts were coded without and coding of the d[illegible]tion of the acts.

    When examining such variables as group size, context, the behavior of individual children and "playful" aggression, interval units were used.

Analysis of the Data

Research Question #1

What percentage of the total observed behavior was classified as aggressive behavior?

Of the total behavior observed, 9.43 percent (of the intervals including those collected during the extended time period) was classified as being aggressive in nature. Factors such as absenteeism, late arrivals, and departures from the classroom were disregarded. When intervals involving the extended time period were not included in the analysis, 8.65 percent of the observed behavior was classified as aggressive. The difference between the two percentages appears to be negligible.

Although the literature does not appear to contain many references to the actual percentage of aggressive versus nonaggressive behavior, the results found in this study suggest that aggressive intervals in the context of the classroom occur fairly frequently (one interval in every eight or nine being classified as containing aggressive behavior).

Descriptions of the aggressive behavior involved. Of the behavior categorized as aggressive, 44.85 percent involved acts of high intensity, large muscle movements (i.e. hit, pinch, poke, struggle, fight, run, chase, etc.), and 23.53 percent involved acts of taking or retaining movements (i.e. grab, snatch, swipe, hold on, tug, etc.) The remaining 31.62 percent involved such descriptive categories as refusal to share an object or space, name calling, derogation, teasing and taunting, etc. (See Table I).

Functions of the aggressive behavior involved. When categorized according to function, 36.30 percent of the aggressive acts had to do with taking or regaining an object and/or space. In 14.71 percent of the acts, the aggressive behavior involved attempts to

Table 1

Scores on Aggressive Acts by Description

Category	Frequency	Percentage
high intensity, large muscle movements	61	44.85
localized, deliberate, more intensely hostile	1	.74
taking or retaining behavior	32	23.53
name calling	7	5.15
tease/taunt	5	3.68
derogation directed at the target personally	6	4.41
negative criticism	4	2.94
refusal to share objects or space	11	8.09
exclusion from play group	5	3.68
denial of liking or friendship	1	.74
tell on/accuse/transfer blame	3	2.21
command aggression	0	.00
not ascertainable	0	.00
Total	136	100%

damage, as well as to destroy property, and in 14.71 percent of the acts, the aggressive behavior functioned to insult, demean, criticize, or tease another child. The remaining 34.28 percent involved such functional categories as bodily injury, rejection, and aversive interference. Very little of the behavior categorized as aggressive, functioned as threats, defiance, noncompliance or blaming and tattling (See Table II).

Blurton Jones (1967) reported that acts of aggression occurred primarily over property. The results of this investigation would appear to support this finding in terms of the function of the aggressive behavior. However, with respect to description of the aggressive behavior, there seems to be some contradiction in conclusions reached. Blurton Jones (1967) indicated that in property fights, little locomotion is involved whereas the results of this analysis would seem to suggest that by description, acts of aggressive behavior involved a large amount (44.85 percent) of high intensity, large muscle movements and locomotion. It seems, therefore, that while the results of the study support the findings of previous research in terms of the function of acts of aggressive behavior (i.e. to retrieve a possession or play area), they do not support the research in terms of the description category (i.e. little locomotion as opposed to high intensity, large muscle movements).

Research Question #2

Is there a difference in the frequency of overall aggressive be-

Table II

Scores on Aggressive Acts by Function

Category	Frequency	Percentage
bodily injury	16	11.76
destruction of property	20	14.71
aversive interference	12	8.82
usurp or regain objector space	49	36.03
blame/tattle	2	1.47
rejection	14	10.29
derogation	20	14.71
threats	2	1.47
defiant noncompliance	1	.74
Total	136	100%

havior between males and females? For example, do instrumental and hostile acts of aggression occur with the same frequency in male and female subjects?

Of the total behavior analyzed as aggressive, calculations indicated that the male subjects participated in 81.62 percent of the acts (both hostile and instrumental) while the female subjects participated in only 18.38 percent of the acts (See Table III). These results are in agreement with the findings of studies conducted by D. Patterson (1976), J. McGuire (1973), Smith and Green (1975), and W. Hartup (1973). It seems then, that males participated in a higher frequency of aggressive behavior.

Sex differences as they related to frequency of aggression (hostile and instrumental). A further analysis involved first, determining the relationship that might exist between sex and instrumental aggression and second, determining the relationship that might exist between sex and hostile aggression. An analysis of the data to determine the relationship between sex and instrumental aggression indicated that of the behavior categorized as instrumental (77.21 percent), 80.95 percent involved male participation while only 19.05 percent involved female participation (See Table IV). This finding would tend to suggest that male subjects participated in a much higher percentage of the total amount of instrumental aggression.

Further analysis of the data to determine the relationship between sex and hostile aggression indicated that of the behavior analyzed

Table III

Sex Differences Related to Forms of Aggressive Acts

	Sex			
Aggressive Acts	Males		Females	
Hostile	f = 26	% 23.42*	f = 5	% 20*
Instrumental	f = 85	% 76.58*	f = 20	% 80*
Total	f = 111	% 81.62	f = 25	% 18.38

* Percentage scores related to "forms" of aggressive acts for males and females.

Table IV

Sex Differences Related to Frequency of Aggressive Acts

	Sex		
Aggressive Acts	Males	Females	Total
Hostile	f = 26 % 83. 87*	f = 5 % 16. 13*	f = 31 % 22.79
Instrumental	f = 85 % 80. 95*	f = 20 % 19. 05*	f = 105 % 77.21

* Percentage scores related to "frequency" of aggressive acts for males and females.

as hostile (22.79 percent), 83.87 percent involved male participation and 16.13 percent involved female participation (See Table IV). This finding would suggest that male subjects participated in a much higher percentage of hostile acts of aggression. The results of both the former and latter analysis would appear to indicate that the male population in this study participated in a much higher percentage of both instrumental and hostile aggression.

Research Question #3

Is instrumental aggression the primary form of aggression amongst four and one-half to five and one-half year old children?

Of the twenty-one children involved in the observational study, instrumental aggression was found to be the primary form of aggression. Of the behavior categorized as aggressive, 77.21 percent was classified as instrumental and 22.79 percent was classified as hostile (See Table IV). These findings are in agreement with similar research conducted by Hartup (1973).

Sex differences related to forms of aggression (instrumental versus hostile). Of the behavior analyzed as aggressive, and involving females (18.38 percent), 80 percent was calculated as being of an instrumental nature while 20 percent was calculated as being of a hostile nature (See Table III). This finding would appear to indicate that females tended to participate in a higher percentage of instrumental acts as opposed to hostile acts of aggression.

In investigating the data with respect to the male population, it was discovered that of the behavior analyzed as aggressive and involving male subjects (81.62 percent), 76.58 percent was calculated as being of an instrumental nature and 23.42 percent was calculated as being of a hostile nature (See Table III). These results would also suggest that in this study, the male population participated in a much higher percentage of instrumental aggression. Apparently, then, instrumental aggression was the primary form of aggression for both sexes.

In sum, it would appear that for both male and female subjects, the primary form of aggression was instrumental aggression. However, when the frequency scores for each particular form of aggression were analyzed with respect to sex differences, males exhibited a higher percentage of aggression for both forms of aggressive behavior. In addition, while both male and female subjects exhibited a high degree of instrumental aggression, male subjects exhibited a higher frequency of aggressive acts labelled as hostile. However, the one point which needs to be stressed here is that, when the overall aggressive behavior was analyzed, boys appeared to be more aggressive than girls.

Research Question #4

What are the antecedents of acts of aggression? Are there discernible patterns to the antecedents?

When antecedents led to acts of aggression, 25 percent involved behaviors categorized as taking, entering and approaching, 23.53 percent involved behaviors categorized as possessing, occupying and doing, and 17.65 percent involved such behaviors as grabbing, snatching and swiping (See Table V). To summarize, these findings indicate that the antecedents leading to aggression were related to dealings of a territorial nature (i.e. territory with respect to activity, space, and possessions).

Furthermore, in 73.53 percent of the aggressive acts, the primary function of the antecedent behavior was to block (See Table VI). Of the blocking behavior, 41.18 percent functioned to block possession, 22.06 percent functioned to block space, and 10.29 percent of the behavior functioned to block activity. Thus it seems apparent that territorial behavior (See Table VI), functioned as blocking behavior leading to almost 75 percent of the aggressive episodes.

Antecedent behavior and instrumental aggression. Antecedent behavior which led to acts of instrumental aggression (See Table VII) involved the following behaviors to the degree listed below (in percentages):

possessing, occupying and doing (21.90 percent);
taking, entering and approaching (25.71 percent);
grabbing, snatching and usurping (22.86 percent).

These results suggest, as did the findings of Hartup's study, that blocking behavior (possessions, space, and activity) very often precedes some form of instrumental aggression. In other words, "per-

Table V

Descriptions of Antecedent Behavior

Category	Frequency	Percentage
mild physical contact	2	1.47
hit, slap, pinch, bite, etc.	13	9.56
possessing, occupying, doing	32	23.53
taking, entering, approaching	34	25.00
grab, snatch, ... interfere	24	17.65
compete	10	7.35
requests possession, space, participation	5	3.68
"no" and other verbal refusals	1	.74
name calling	5	3.68
teasing and taunting	5	3.68
insult, ridicule, physical acts of derogation	1	.74
denials of friendship or liking	0	.00
tells on or accuses	1	.74
command aggression	0	.00
negative criticism	2	1.47
mild verbalization	1	.74
Total	136	100%

Table VI

Functions of Antecedent Behavior

Category	Frequency	Percentage
blocking possessions	56	41.18
blocking space	30	22.06
blocking activity	14	10.29
group rules - violation	3	2.21
group rules - assertion	2	1.47
provision of rg - sg	1	.74
provision of model	9	6.62
bodily contact - accidental	2	1.47
bodily contact - deliberate	14	10.29
derogation and social comparison	5	3.68
blames/tattles	0	.00
threaten blocking	0	.00
threaten bodily contact	0	.00
threaten derogation	0	.00
threaten to tattle	0	.00
threaten interpersonal rejection	0	.00
interpersonal rejection	0	.00
other	0	.00
Total	136	100%

Table VII

Antecedent Behavior (by description) Preceding Acts of Instrumental Aggression

Category	Frequency	Percentage
mild physical contact	1	.95
more intense physical contact	7	6.67
possessing, occupying, doing	23	21.90
taking, entering, approaching	27	25.71
grab, snatch, swipe, hold on, tug, invade, etc.	24	22.86
compete	10	9.52
request possessions, space, participation	5	4.76
"no" and other verbal prohibitions or refusals	1	.95
name calling	1	.95
teasing and taunting	2	1.90
insult, ridicule, physical acts of derogation	0	.00
denials of friendship or liking	0	.00
tells on or accuses	1	.95
commands aggression	0	.00
negative criticism	2	1.90
mild verbalizations	1	.95
Total	105	100%

sonal behaviors" such as derogation, rejections, etc. (See Table VIII) did not serve as contributing factors in instrumental acts of aggression.

Antecedent behavior and hostile aggression. Antecedent behaviors preceding acts of hostile aggression (See Table IX) involved the descriptive behaviors listed below (in percentages):

hitting, slapping and pinching (19.35 percent);
possessing, occupying and doing (29.03 percent);
taking, entering and approaching (22.58 percent).

This information suggests that behaviors which preceded hostile aggression involved more intense, physical contact while behavior which led to instrumental aggression involved more intense, acquisition and retention type behaviors.

Furthermore, antecedent behaviors which preceded hostile behavior functioned as blocking behavior on 51.61 percent of the occasions. On 22.58 percent of the occasions deliberate bodily contact was the antecedent behavior which preceded hostile behavior. In addition, on 12.90 percent of the occasions, derogation and social comparisons were identified as the antecedent behaviors preceding hostile aggression (See Table X).

These latter findings would suggest that, in contrast to instrumental aggression, where blocking continued to lead up to hostile aggression, bodily contact, derogation and social comparisons appeared as antecedents to hostile behavior. In sum, while blocking

Table VIII

Antecedent Behavior (by function) Preceding Acts of Instrumental Aggression

Category	Frequency	Percentage
blocking possessions	55	52.38
blocking space	22	20.95
blocking activity	8	7.62
group rules - violation	1	.95
group rules - assertion	2	1.90
provision of rg - sg	1	.95
provision of model	8	7.62
bodily contact - accidental	1	.95
bodily contact - deliberate	7	6.67
derogation and social comparison	0	.00
blames, tattles	0	.00
threaten blocking	0	.00
threaten bodily contact	0	.00
threaten derogation	0	.00
threaten to tattle	0	.00
threaten interpersonal rejection	0	.00
interpersonal rejection	0	.00
other	0	.00
Total	105	100%

Table IX

Antecedent Behavior (by description) Preceding Acts of Hostile Aggression

Category	Frequency	Percentage
mild physical contact	1	3.23
more intense physical contact	6	19.35
possessing, occupying, doing	9	29.03
taking, entering, approaching	7	22.58
grab, snatch, swipe, hold on, tug	0	.00
compete	0	.00
request possession, space, participation	0	.00
"no" and other verbal prohibitions or refusals	0	.00
name calling	4	12.90
teasing and taunting	3	9.68
insult, ridicule, physical acts of derogation	1	3.23
denials of friendship or liking	0	.00
tells on or accuses	0	.00
command aggression	0	.00
negative criticism	0	.00
mild verbalization	0	.00
Total	31	100%

Table X

Antecedent Behavior (by function) Preceding Acts of Hostile Aggression

Category	Frequency	Percentage
blocking possessions	2	6.45
blocking space	8	25.81
blocking activity	6	19.35
group rules - violation	2	6.45
group rules - assertion	0	.00
provision of rg - sg	0	.00
provision of model	1	3.23
bodily contact - accidental	1	3.23
bodily contact - deliberate	7	22.58
derogation and social comparison	4	12.90
blames, tattles	0	.00
threaten blocking	0	.00
threaten bodily contact	0	.00
threaten derogation	0	.00
threaten to tattle	0	.00
threaten interpersonal rejection	0	.00
interpersonal rejection	0	.00
other	0	.00
Total	31	100%

behaviors most often preceded instrumental aggression, they (i.e. a small percentage of blocking behaviors) along with bodily contact, derogation and social comparisons tended to precede hostile outbursts.

In addition, a further analysis of the data indicated that when antecedent behaviors preceded instrumental outbursts, almost one-half (42.86 percent) took the form of usurping or regaining an object or space (See Tables XI and XII). In contrast, when antecedent behaviors came before hostile outbursts (See Tables XIII and XIV), almost half took the form of bodily injury (45.16 percent), and almost half consisted of reciprocated derogation, threats and tattling (41.95 percent). These findings support Hartup's (1973) conclusions that threats of self-esteem lead more frequently to hostile attempts to injure the agent of frustration than to object-oriented aggression particularly for older children.

Additional Findings

In this section, additional findings regarding the relationship between aggressive behavior, and such variables as group size, context, and individual differences are discussed. In addition, findings related to "playful aggression" will be described.

Findings Related to Group Size

From observations collected, it can be stated that the children in this study spent the largest portion of their time involved in play

Table XI

Acts of Instrumental Aggression by Description

Category	Frequency	Percentage
words which describe high intensity large muscle movements	47	44.76
words depicting smaller muscle movements	0	.00
words that denote aggressive taking or retaining behavior	29	27.62
name calling	0	.00
tease or taunt	5	4.76
derogation directed at the target personally	2	1.90
negative criticism	4	3.81
refusal to share objects or space	11	10.48
exclusion from play group or activity, blocking path	4	3.81
denial of liking or friendship	1	.95
tell on, accuse, transfer blame to another	2	1.90
command aggression	0	.00
not ascertainable	0	.00
Total	105	100%

Table XII

Acts of Instrumental Aggression by Function

Category	Frequency	Percentage
bodily injury	2	1.90
destruction of property	20	19.05
aversive interference in activity	12	11.43
usurp or regain object or space	45	42.86
blame or tattle	1	.95
rejection	13	12.38
derogation	10	9.52
threats	1	.95
defiant noncompliance	1	.95
Total	105	100%

Table XIII

Acts of Hostile Aggression by Description

Category	Frequency	Percentage
words which describe high intensity, large muscle movements	14	45.16
words depicting smaller muscle movements	1	3.23
words that denote aggressive taking or retaining behaviors	3	9.68
name calling	7	22.58
tease or taunt	0	.00
derogation directed at the target personally	4	12.90
negative criticism	0	.00
refusal to share objects or space	0	.00
exclusion from play group or activity, path blocking	1	3.23
denial of liking or friendship	0	.00
tell on, accuse, transfer blame to another	1	3.23
command aggression	0	.00
not ascertainable	0	.00
Total	31	100%

Table XIV

Acts of Hostile Aggression by Function

Category	Frequency	Percentage
bodily injury	14	45.16
destruction of property	0	.00
aversive interference in activity	0	.00
usurp or regain object or space	4	12.90
blame or tattle	1	3.23
rejection	1	3.23
derogation	10	32.26
threats	1	3.23
defiant noncompliance	0	.00
Total	31	100%

groups consisting of two members. In play groups of this size, 5.69 percent of the intervals involved aggressive behavior and 94.31 percent involved non-aggressive behavior (See Table XV). The next most frequent group sizes consisted of four and three members respectively. In play groups of four members, 9.43 percent of the behavior was categorized as being aggressive and 90.58 as being non-aggressive. In play groups consisting of three members, 16.09 percent of the behavior involved aggressive behavior and 83.91 non-aggressive behavior. In sum, most of the interactions were dyadic (involving two children). This finding is in agreement with the results of research conducted by McGrew (1969), and also supports the view that children at this age tend to play in small (i.e. groups of two) rather than in larger groups. Hence it would appear that of all the group sizes observed, the highest percentage of interactions took place in dyads (groups of two). When three individuals were together, the percentage of aggressive behavior was much greater (16.09) than when two children were together (5.69). However, in groups of four and five, the percentage of aggressive behavior was almost the same (9.43 for four children and 9.47 for five children). When group sizes became larger than four in number, the frequency of interaction dropped off considerably (See Table XV).

Findings Related to Context

The analysis of data related to context (See Figure 1) indicated that children in this study spend more time in the art area than any

Table XV

Percentage of Aggressive Versus Non-aggressive Intervals as Related to Group Size

Group Size	Aggressive Intervals Frequency	%	Non-aggressive Intervals Frequency	%	Total
1	6	4.20	137	95.80	143
2	17	5.69	282	94.31	299
3	37	16.09	193	83.91	230
4	23	9.43	221	90.57	244
5	9	9.47	86	90.53	95
6	6	23.08	20	76.92	26
7	0	.00	12	100.00	12
8	1	100.00	0	.00	1
Total	99		951		1050

other area. Of the time spent in the art center, 4.80 percent was calculated as being aggressive and 95.20 percent as being non-aggressive (See Table XVI). The large rug area, the small rug area, and the games area were observed to be the next most frequently used areas. Of the time spent in the large rug area, 7.85 percent of the intervals analyzed involved aggressive behavior and 92.15 percent of the intervals involved non-aggressive behavior.

However, while the block area was not used to the same degree as some of the other areas (i.e. the art area, large rug area, small rug area, and the games area), a rather high frequency of aggressive behavior occurred (16.98 percent) in this center. The first phase of the study conducted by Diane Patterson (1976) indicated similar results.

The foregoing findings possibly suggest that certain centers are more conducive to aggressive behaviors than are other areas in an early childhood classroom. For example, the art area, suggests a more highly structured setting in which the children worked at tables. While there was a high degree of interaction of the children with each other, only a small percentage of the interactions were aggressive in nature. This would also explain the higher incidence of aggressive behavior in the block area, despite the fact that the group size was controlled. Here, although only 53 intervals of the behavior were recorded, 16.98 percent of that behavior was labelled as aggressive.

Table XVI

Percentage of Aggressive Versus Non-aggressive Intervals as Related to Play Area

Play Area	No. of Aggressive Intervals		No. of Non-aggressive Intervals		Limit set on No. of Players	Total
	Frequency	%	Frequency	%		
(1) Small Rug Area	19	16.67	95	83.33	No limit	114
(2) Sandbox	3	8.57	32	91.43	Group of 2	35
(3) House Corner	12	11.65	91	88.35	Group of 4	103
(4) Large Rug Area	15	7.85	176	92.15	No limit	191
(5) Art Area	18	4.80	357	95.20	No limit	375
(6) Water Table	5	10.20	44	89.80	Group of 2	49
(7) Block Area	9	16.98	44	83.02	Group of 2	53
(8) Games Area	17	14.91	97	85.09	No limit	114
(9) Fisher Price	0	0.00	3	100.00	No limit	3
(10) Flannelgraphs	1	7.69	12	92.31	No limit	13
(11) Manipulative	0	0.00	0	0.00	No limit	0
Total	99		951			1050

Findings Related to the Behavior of Individual Children

Of the data collected on every child observed in the study, four boys were selected on the grounds that they appeared to be involved in a larger number of aggressive intervals than any of the other children. Of the 33 observational intervals collected on child number 9 (See Table XVII), 33 percent involved aggressive behavior and 67 percent involved non-aggressive behavior.[2] Child number 3, was observed for a total of 59 intervals and of these intervals, 19 percent involved aggressive behavior. Child number 21, was observed for a total of 49 intervals and of these intervals, 18 percent involved aggressive behavior. Of the 57 observational intervals collected on child number 2, 16 percent involved aggressive behavior. Child number 7, appeared to be the only girl who displayed aggressive behavior to the same degree as the four boys. Of the 58 intervals in which observations were collected on child number 7, 16 percent involved aggressive behavior and 84 percent involved non-aggressive behavior.

An analysis of data collected on these five children would leave one with the following impressions:

1. Some of the children in this group appeared to be ag-

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[2] The variation in the total number of intervals collected on each of the children can be accounted for primarily in terms of individual involvement in aggressive behavior that occurred during the extended time periods, absenteeism, late arrivals, and departures from the classroom.

Table XVII

Percentage of Aggressive Versus Non-aggressive Intervals as Related to Individual Children

Children by Number	Aggressive Intervals		Non-aggressive Intervals		Total No. of Intervals
	Frequency	%	Frequency	%	
Number #1	6	10.71	50	89.29	56
Number #2	9	15.79	48	84.21	57
Number #3	11	18.64	48	81.36	59
Number #4	4	8.16	45	91.84	49
Number #5	1	1.79	55	98.21	56
Number #6	2	5.00	38	95.00	40
Number #7	9	15.51	49	84.48	58
Number #8	5	8.93	51	91.07	56
Number #9	11	33.33	22	66.67	33
Number #10	2	3.57	54	96.43	56
Number #11	1	2.08	47	97.92	48
Number #12	4	7.14	52	92.86	56
Number #13	7	12.50	49	87.50	56
Number #14	5	10.41	43	89.58	48
Number #15	3	5.36	53	94.64	56
Number #16	2	3.57	54	96.43	56
Number #17	2	6.25	30	93.75	32
Number #18	4	8.33	44	91.67	48
Number #19	2	6.25	47	95.92	49
Number #20	0	0.00	32	100.00	32
Number #21	9	18.37	40	81.63	49
Total 21	99		951		1050

gressive as a means of entrance into a group.

2. Aggressive behavior associated with these five children appeared in some cases to be related to a struggle for leadership (i. e. a dominance relationship).

"Playful" Aggression

While observing the play behavior of the children in this study, it became apparent that a pattern of behaviors was appearing that seemed different from "real" aggression, and yet in some respects, appeared to contain many of the same characteristics as the actual aggressive acts observed. On the basis of somewhat similar observations by Blurton Jones and others, the term "playful" aggression was chosen to describe the behavior noted. Currently, Blurton Jones (1967), McGrew (1969), and Smith (in Foss, 1974), are attempting to both identify and describe "playful" aggression.

As indicated by Smith (in Foss, 1974), "playful" aggression or "rough-and-tumble play" can take a variety of forms in young children although a comprehensive description is not yet available. Blurton Jones was the first to attempt a detailed description of "rough-and-tumble play" in young children. The human "rough-and-tumble play" as he identifies it consists of those seven movement patterns which tend to occur at the same time as each other and not to occur with other movements. These are as follows:

> running, chasing and fleeing; wrestling; jumping up and down with both feet together ('jumps'); beating

> at each other with an open hand without actually hitting ('open beat'); beating at each other with an object but not hitting; laughing. In addition falling seems to be a regular part of this behavior, and if there is anything soft to land on children spend much time throwing themselves and each other on to it (p. 357).

McGrew (1969) describes "quasiagonistic" behavior or "rough-and-tumble play" as involving "vigorous, gross activity which does not result in injury or separation." He continues his discussion by stating that although this pattern of behavior appears similar to agonistic behavior because of the commonality of motor patterns, it appears to function almost in opposition to "real" aggressive encounters.

Peter Smith (in Foss, 1974) extends Burton Jones' description of "rough-and-tumble play" to include the "playful"aggressive behavior of older children and attempts to describe some of the changes that take place. Smith indicates that a more complex form of "rough-and-tumble play" seems to emerge with older and more socially experienced children and involves objects. With the incorporation of objects into play situations, the "rough-and-tumble play" or "playful" aggression becomes associated with such games as, shooting, chasing, and role-playing with such themes as cowboy and indians, hunting an animal, pretending to be a monster, space conflicts, and cops and robbers.

Utilizing the descriptions of "rough-and-tumble play" as outlined by Blurton Jones (1967), McGrew (1969), and Smith (in Foss, 1974), the investigator was able to collect a small sample of "playful" aggression. The following questions were then pursued:

1. What percentage of the total observed behavior could be classified as "playful" aggression?
2. Are there sex differences in the frequency of overall "playful" aggressive behavior?
3. What is the primary form of "playful" aggression amongst four and one-half to five and one-half year old children?

Question #1

What percentage of the total observed behavior was classified as "playful" aggression?

Of the total behavior observed, 7.62 percent (of the intervals including those collected during the extended time period) was classified as being aggressive in a "playful" sense. In calculating this percentage, such factors as absenteeism, late arrivals and departures from the classroom were disregarded. When intervals involving the extended time period were not included in the analysis, 7.68 percent of the observed behavior was classified as aggressive in a "playful" sense. The difference between the two percentages appears to be negligible.

Since this pattern of behavior ("playful" aggression) has received little or no attention in the literature on child behavior and development (Smith and Connolly, 1972), comparisons with existing research findings is impossible. Perhaps all that can be stated at this point in time is that the results of this study suggest that "playful" aggression does occur as an integral part of all of the behavior observed in this early childhood setting (i.e. one interval in approximately every seven intervals being identified as containing "playful" aggression). It is possible, therefore, to assume that "playful" aggression is an important aspect of children's behavior at this particular age level. Blurton Jones (1967) suggests that there is a "critical period" for developing this kind of behavior and which might reach its peak before the age of three years. The results of this investigation seem to suggest that "playful" aggression is an integral part of the child's development and takes on a more complex form in older children.

Question #2

Are there sex differences in the frequency of overall "playful" aggressive behavior?

Of the total behavior identified as "playful" aggression, calculations indicated that the male subjects participated in 81.25 percent of the intervals while the female subjects participated in only 7.5 percent of the intervals (See Table XVIII). In addition, 11.25 percent of the intervals were identified as involving both male and female participation. The results are in agreement with the findings of research conducted by Peter Smith (in Foss, 1974). Smith's research indicates that "rough-and-tumble play" behaviors occur more frequently amongst boys and that this difference applies more to four year old boys than to three year old boys. Furthermore, Smith suggests that this frequency applies more to contact behaviors (wrestle/tumble) than to non-contact behaviors (chase/flee, group running).

A study of Bushmen children conducted by Blurton Jones and

Table XVIII

Percentage of "Playful" Aggression of an Instrumental Versus a Hostile Nature as Related to Sex

Aggressive Intervals	Male	Female	M/F	Total
Hostile	f = 42 % 60.62	f = 4 % 66.67	f = 9 % 100	f = 55 % 68.75
Instrumental	f = 15 % 23.08	f = 2 % 33.34	f = 0 % 0	f = 17 % 21.25
Neither	f = 8 % 12.31	f = 0 % 0	f = 0 % 0	f = 8 % 10.00
Total	f = 65 % 81.25	f = 6 % 7.50	f = 9 % 11.25	f = 80 % 100

Konner (1973), offers some contrast to the above findings with respect to sex differences and frequency of "rough-and-tumble play." Quantitative observations of three to six year olds illustrated a non-significant sex difference in the Bushmen children; Bushmen girls scored a very much higher frequency of rough-and-tumble play than the London girls. As indicated by Smith (in Foss, 1974), caution must be taken in using this study in a contrasting situation for the following reasons:

1. variations in physical environment are probably important; and
2. the evidence of the nature and magnitude of the sex difference in English children over a number of studies is not entirely consistent (Blurton Jones, 1972; Smith, 1972).

Question #3

What is the primary form of "playful" aggression amongst four and one-half to five and one-half year old children?

Of the twenty-one children involved in the observational study, behavior of a hostile nature was found to be the primary form of "playful" aggression.

Of the aggressive intervals identified as "playful", 21.25 percent was categorized as being of an instrumental nature, and 68.75 percent as being of a hostile nature. In addition, 10 percent was identified as being aggressive in a "playful" sense but not fitting into either of the two preceding categories (See Table XVIII).

Furthermore, of the behavior identified as "playful" aggression and involving male children, 60.62 percent was categorized as containing hostile intervals, and 23.08 percent as containing instrumental intervals. With respect to "playful" aggression involving females, 66.67 percent was categorized as being of a hostile nature and 33.33 percent as being of an instrumental nature (See Table XVIII). Apparently, then, behavior of a hostile nature was the primary form of "playful" aggression for both sexes.

A point which needs to be stressed at this time, is that there existed some hesitation on the part of the investigator to analyze "playful" aggression utilizing the categories of hostile and instrumental aggression as described by W. Hartup (1973). For while this procedure of analysis may provide useful information in the investigation of "actual" aggression it may, at the same time, prove to be an incorrect procedure to follow in the study of "playful" aggression.

As outlined by Blurton Jones (1967), "rough-and-tumble play" relates to actual hostile behavior in that:

> 1. It looks like it to adults, and quite often one sees adults responding as if a play pattern (e.g. open-handed beat plus play face) were really hostile.
>
> 2. Some children respond as if it were hostile, e.g. they flee from play attack movements.
>
> 3. Sometimes play fleeing becomes real fleeing.
>
> 4. Some motor patterns are similar, e.g. orientation of locomotion (though there is little locomotion in property fights, and a possible similarity in form between laughing and screaming with intermediates between them, and the arm position and movement of beating in both rough and tumble and hostile behavior (p. 359).

However, Blurton Jones (1967) offers this cautionary remark:

> despite these similarities, the players neither respond as if their playmates were hostile nor show any indication of their own motivation being hostile (i. e. of the causes of rough and tumble being at all related to the causes of fighting), short-term effects of this play are eventual exhaustion, continuing to stay with the playmates, seeking them out another time to play with. If anything, its short-term effect is to gain friends rather than to lose them (p. 359).

Whether the foregoing procedure of analysis can be used in the study of "playful" aggression is open to question. Nevertheless, it would tend to leave one with the following impressions:

1. In "playful" aggression, children in this age group tend to adopt a hostile "mode" of aggression.
2. "Playful" aggression appears to be a "safe" method for dealing with aggressive tendencies that might otherwise lead to actual physical (hostile) acts of aggression.
3. "Playful" aggression appears to be a socially acceptable way of dealing with aggressive tendencies or feelings.
4. "Playful" aggression appears to have rules which are understood by the participants. Some of these rules involved knowledge of the game being played, being able to note from facial features, posture, etc. whether in fact, the aggressive act was real or "playful."
5. "Playful" aggression takes increasingly complex forms as the children develop.

The foregoing impressions are derived from limited data and thus cannot be widely generalized. They do, however, suggest areas for further research.

Summary of the Chapter

This chapter has presented the findings of the study. The results of the analysis associated with each of the research questions were discussed along with additional findings related to such areas as days of the week, group size, context, the behavior of individual children and "playful" aggression.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

The study of aggression has always been a problem for researchers owing to problems of definition and difficulties in the actual measurement of aggressive acts (Singer, 1973; Hartup, 1973; Bandura, Ross and Ross, 1963). Furthermore, the literature (of an ethological nature) dealing with aggression in young children is not extensive.

Research into aggression using a naturalistic observational framework seems to be a promising recent development in that it provides information on "the functional significance of the activity." When naturalistic investigative procedures are used, they provide researchers with the opportunity to observe aggressive behavior in its most natural context.

Purpose of the Study

The purpose of this investigation was to describe occurrences of aggressive behavior and to examine the functions of aggression in young children using a naturalistic observation technique developed by Willard W. Hartup (1973) and his associates at the University of Minnesota. The data was collected in preschool settings in which the observer recorded the free play behavior of the children.

The subjects involved in this study consisted of twenty-one children (thirteen boys and eight girls) ranging in age from four and one-half to five and one-half years. The children were enrolled in one kindergarten program located in a classroom of an elementary school in a large urban setting. The school was selected by the supervisory staff of the school board for use in this study. The children were under the supervision of one teacher with parents acting as aides on a daily basis. The program was "open" in the sense that the schedule permitted the children to select from a range of center-based activities with minimal adult constraints and/or interference for approximately one hour each day.

Procedure

The strategy chosen for this study involved naturalistic observation (after Hartup, 1973). Observations were conducted over a six-week period, two weeks being allotted to the pilot study, and a period of approximately one month being allotted to the main study. The method of observation was a combination of time and event sampling in which both aggressive and non-aggressive activities were recorded. The time sampling procedure governed the overall progression of the observations. During each observational session, the behavior of half the children within the classroom was described as it occurred and recorded for further analysis using a tape recorder. The behavior of each child was observed every other day for a period of two-minutes. An extension of this time period occurred only when the target child (the child being observed) was involved in an aggressive sequence. In the extended observations, the observer continued to record until the aggressive sequence ended or until the two minute period designated as a rest period had been used up and the next two minute observational sequence was scheduled to begin. The duration of the aggressive act was then noted. A schedule was designed to ensure that the children's behavior was observed on a random basis. A number of general procedures (outlined in Chapter III) were followed in the analysis of the data. A system of categories used in the analysis of the data and developed by Hartup (1973), included the following descriptions and functions:

Coding Aggressive Behavior as Either Hostile or Instrumental

Describing the Aggressive Act

Coding the Primary Function of the Aggressive Act

Describing Antecedent Event Behavior.

Coding the Primary Function of the Antecedent Behavior.

Additional categories were devised to obtain information pertaining to group size, sex and context.

The Limits on Generalizability

The study has a number of characteristics which limit the generalizability of the findings to "other" populations of this age group.

First, all subjects in the study with the exception of two were white and spoke English as their main language. In addition, all of the children ranged in age between four and one-half and five and one-half years and lived in an urban, middle class community. Thus generalizations to subjects of other languages, races, and age groupings, living in community settings different from those characteristic of this study should be made with caution.

Second, the observations were collected in the mornings during the month of March after the social structures of the group were well established. Hence, caution should be used when relating the findings of the study to other times in the day and as well, to different months of the year.

Third, there were twenty-one children in the group. In larger or smaller groups aggressive behavior could have different patterns.

Fourth, since observations were limited to the free play period, there was little information gathered on the teacher, her relationship with the children, her beliefs and opinions about aggression, and as well the structure that she created in her classroom to guide the children's behavior. All of these factors could have influenced the data. Thus generalizations must be made cautiously.

Finally, the unfamiliar presence of a researcher with tape recording equipment may have altered the behavior of the children and other adults in the classroom.

Conclusions

The following conclusions are based on the data and analyses contained in Chapter IV:

1. The results of this study suggest that aggressive intervals in the context of the classroom occur fairly frequently (one interval in every eight being classified as containing aggressive behavior).
2. The results of this analysis would seem to suggest that by function, acts of aggressive behavior occurred primarily over property and that by description, acts of aggressive behavior involved a large amount (44.85 percent) of high intensity, large muscle movements.
3. Males participated in a higher frequency of the total aggressive behavior analyzed (of both an instrumental and hostile nature).
4. Of the twenty-one children involved in the observational study, instrumental aggression was found to be the primary form of aggression for both sexes.
5. Antecedents leading to aggression were related to dealings of a territorial nature (i.e. territory with respect to activity, space, and possessions). In this regard, territorial behavior functioned as blocking behavior leading to almost 75 percent of the aggressive episodes.
6. Blocking behavior (blocking of possessions, space, and activity) very often preceded some form of instrumental aggression. In other words, "personal behaviors" such as derogation, rejection, etc. did not serve as contributing

factors in instrumental acts of aggression.

7. Behaviors which preceded hostile aggression involved more intense, physical contact while behaviors which led to instrumental aggression involved more intense, acquisition and retention type behaviors.

8. In contrast to instrumental aggression, where blocking continued to lead up to hostile aggression, bodily contact, derogation, and social comparisons appeared as antecedents to hostile behavior.

9. Threats to self-esteem led more frequently to hostile attempts to injure the agent of frustration than to object-oriented aggression.

10. Of all the group sizes observed, the highest percentage of interaction took place in dyads (groups of two). When three individuals were together, the percentage of aggressive behavior was much greater (16.09) than when two children were together (5.69). However, in groups of four and five, the percentage of aggressive behavior was almost the same (9.43 for four children and 9.47 for five children). When group sizes became larger than four in number, the frequency of interaction dropped off considerably. It would appear that children of this age tend to play in small (i.e. groups of two) rather than in larger groups.

11. In this early childhood setting, certain centers appeared to

be more conducive to aggressive behaviors than other centers. For example, the art area suggested a more highly structured setting in which the children worked at tables. While there was a high degree of interaction of the children with each other, only a small percentage of the interactions were aggressive in nature. This would also explain the higher incidence of aggressive behavior in the block area, despite the fact that the group size was controlled. Here, although only 53 intervals of behavior were recorded, 16.98 percent of that behavior was labelled as aggressive.

12. The results of this study suggest that "playful" aggression did occur as an integral part of all of the behavior observed in this early childhood setting (i.e. one interval in approximately every seven being identified as containing "playful" aggression). It is possible, therefore, to assume that "playful" aggression is an important aspect of children's behavior at this particular age level.
13. Males participated in a higher frequency of "playful" aggression.
14. Behavior of a hostile nature was the primary form of "playful" aggression for both sexes.

Implications for Educational Research

Several implications (general and specific) related to aggression in the early childhood years can be drawn from the stated conclusions.

General Recommendations

1. Since ethology has, until now, largely been related to the study of animal behavior, the findings of this study should illustrate the value of using an ethological approach to study human behavior, more specifically, to study the aggressive tendencies of young children. Owing to the fact that the ethological approach may prove helpful in the study of human behavior, and particularly the behavior of children, research conducted along this line is certainly needed.
2. As indicated by Hartup (1973), the distinction between hostile and instrumental aggression (originating with Feshbach, 1964; Buss, 1966; and others) is far from clear, particularly when applied to the study of the behavior of older children. Nevertheless, the findings of this study demonstrate the value of using this distinction (between hostile and instrumental aggression) in an early childhood setting with children ranging in age from four and one-half to five and one-half years of age.
3. The analysis of the data by description and function (as outlined by Hartup, 1973), though difficult and perhaps complex in its application, does in fact represent a more complete functional analysis of aggression in children's social interactions. As suggested by Smith (in Foss, 1974),

the kinds of behavioral categories used by ethologists can be of two types - those defined in physical terms and those defined in goal-oriented terms. Ideally, ethologists hope to bring all descriptions of behavior down to physical terms. So far the only attempts at this kind of analysis are by Blurton Jones (1967), Grant (1968), and Smith (1973). Hartup's categories represent an attempt to look at aggressive behavior in terms of both physical and goal-oriented descriptions though perhaps on a more general, goal-oriented level than the previously mentioned researchers. If the eventual aim of current researchers is to compile an 'ethogram' or behavior dictionary for the purposes of studying aggressive behavior in young children, there exists a need for more ethological studies to be conducted that attempt to build a comprehensive list of behavioral units into which more complex behaviors can be broken down. As stated by Hartup (1973):

> A general reductionist effort should be made with respect to the aggression concept. Sub-categories are needed which are less elastic than those in current vogue but which, at the same time, are sufficiently inclusive to ensure a modicum of ecological validity (p. 4).

Specific Recommendations

1. Numerous studies (Green, 1933; Dawe, 1934; Muste and Sharp, 1947; Sears, 196; Feshbach, 1969) have found sex

differences to exist in the expression of aggressive behavior. Although sex differences were apparent in this study, further research, some of a longitudinal nature, is necessary to substantiate this difference.

2. The findings of this study support the view that children at this age tend to play in small groups (i. e. groups of two) rather than in larger groups. The results of other investigations related to the study of animal behavior (Evans, 1967; Southwick, 1965) indicate that the size of play groups increases with age and social experiences up to young adulthood. There is a need for longitudinal studies which would look at group size and its relationship to the onset of aggressive tendencies in young children.
3. Hartup (1973), states that there is no evidence that suggests that boys and girls are "wired" differently with respect to the operation of hostile and instrumental aggression. Further research is needed to substantiate this statement (i. e. antecedents leading up to acts of hostile and instrumental aggression and related to sex).
4. The results of this investigation suggest that "playful" aggression is an integral part of the child's development and that it takes on a more complex form in older children. Since this pattern of behavior ("playful" aggression) has received little or no attention in the literature on child

behavior and development (Smith and Connolly, 1972), there exists a need for studies to be implemented that build upon the current knowledge in this area.

5. This study was carried out in an urban, middle class area. Hence, a need exists to carry out similar studies in other social class settings in that, aggressive tendencies may be viewed differently by other social class groups.

6. One of the observations of the study was that some children (girls in particular) were using language as a means of instigating (i.e. as an antecedent leading to) aggressive acts. As the investigator was not an expert in language development, this area was not explored to any extent. However, a need does exist to examine the role that developing linguistic skills does play in the control of behavior, including aggressive behavior.

Implications for Teaching Practice

Aggressive behavior in the context of an early childhood classroom is a fairly frequent occurrence. Moreover, the expression of aggressive behavior is a natural and necessary interaction amongst children at this age level and teachers should exercise judgment in dealing with the aggressive sequences observed in class.

It is also evident that the form that aggression takes in young children is to a large degree, of an instrumental (object-oriented) nature as opposed to a hostile (person-directed) nature. Teachers, therefore, should not be overly concerned with the possibility that children at this age level might hurt each other. Rather, the concern should be to ensure that the child does not hurt himself.

Secondly, the fact that interactions amongst young children occurred very frequently and very quickly (e.g. 12.9 seconds on the average) makes it difficult for the adult in charge to sort out the sequence of events leading up to an aggressive episode. This information possibly suggests that teachers should not react too hastily but rather continue to observe the children involved in an aggressive episode until such time that it becomes necessary to interfere or until such time that the aggressive episode ends. In other words, teachers need to exercise good judgment in assessing the aggressive behavior of young children. This suggests that one of the basic skills required of teachers generally, is that they become accurate and knowledgeable observers of young children's behavior.

"Playful" aggression is an important aspect of young children's behavior and should therefore, be encouraged since through such "rough and tumble" experiences children may (as suggested by de Wit and Hartup, 1974):

> 1. enlarge their own repertoire of effective aggressive behaviors, and
>
> 2. establish mechanisms for coping with the affective outcomes of aggressive interactions (p. 608).

BIBLIOGRAPHY

Alexander, B. K., and Bowers, J. M. The social organization of Japanese monkeys in a two-acre enclosure. Folia Primatologica, 1969, 10, 220-242.

Altmann, S. A. Sociobiology of rhesus monkeys. 11. Stochastics of social communication. Journal of Theoretical Biology, 1965, 8, 490-522.

Altmann, J. Observational study of behavior: sampling methods. Behavior, 1974, 49, 227-265.

Ardrey, R. African genesis: A personal investigation into the animal origins and nature of man. London: Fontana, 1961.

Ardrey, R. Territorial imperative. London: Collins, 1966.

Azrin, N. H., Hutchinson, R. R., and Hake, D. Pain-induced fighting in the squirrel monkey. Journal of the Experimental Analysis of Behavior, 1963, 6, 620-621.

Bandura, A., Ross, D., and Ross, S. V. Vicarious reinforcement and imitative learning. Journal of Abnormal and Social Psychology, 1963, 67, 601-607.

Bandura, A., and Walters, R. H. Social learning and personality development. Toronto: Holt, Rinehart and Winston Inc., 1963.

Berkowitz, L. Aggression: A social psychological analysis. New York: McGraw-Hill, 1962.

Berkowitz, L. The concept of aggressive drive: some additional considerations. In L. Berkowitz (Ed.), Advances in experimental social psychology. New York: Academic Press, 1965, 2, 301-329.

Berkowitz, L. (Ed.). Roots of aggression. New York: Atherton Press, 1969.

Blurton, N. G. An ethological study of some aspects of social behavior of children in nursery school. In D. Morris (Ed.), Primate Ethology. London: Weidenfeld and Nicolson, 1967, 347-368.

Blurton Jones, N. G., and Konner, M. An experiment on eyebrow-raising and visual searching in children. Journal of Child Psychology and Psychiatry, 1970, 11, 233-240.

Blurton Jones, N. G., and Konner, M. J. Sex differences in behavior of London and Bushmen children. In R. P. Michael and J. H. Crook (Eds.), Comparative ecology and behavior of primates. New York: Academic Press, 1972.

Blurton Jones, N. G. (Ed.). Ethological studies of child behavior. London: Cambridge University Press, 1972 (a).

Blurton Jones, N. G. Categories of child-child interaction. In N. G. Blurton Jones (Ed.), Ethological studies of child behavior. London: Cambridge University Press, 1972 (b), 97-127.

Blurton Jones, N. G., and Leach, G. M. Behavior of children and their mother at separation and greeting. In N. G. Blurton Jones (Ed.), Ethological studies of child behavior. London: Cambridge University Press, 1972 (c), 217-247.

Blurton Jones, N. G. Non-verbal communication in children. In R. A. Hinde (Ed.), Non-verbal communication. London: Cambridge University Press, 1972 (d), 271-296.

Blurton Jones, N. G. Criteria used in describing facial expressions of children. Human Biology, 1972 (e).

Buss, A. H. The psychology of aggression. New York: Wiley, 1961.

Buss, A. H. Instrumentality of aggression, feedback, and frustration as determinants of physical aggression. Journal of Personality and Social Psychology, 1966, 3, 153-162.

Cairns, R. B. Ontogenetic contributions to aggressive behavior. In F. J. Monk, W. W. Hartup, and Jan de Wit (Eds.), Determinants of Behavioral Development. New York: Academic Press, 1972.

Campbell, J. N. and Nadelman, L. Sex and age differences in target choice on an aggressive task. Michigan University, Ann Arbor, 1972. (ERIC Document Reproduction Service No. ED084027).

Charlesworth, W. R. Human intelligence as adaptation: An ethological approach. Unpublished manuscript, University of Minnesota, 1974.

Darwin, C. R. The origins of species by means of natural selection (New Ed.). New York: Washington Square Press, 1963.

Davitz, J. R. The effects of previous training on post-frustration behavior. Journal of Abnormal and Social Psychology, 1952, 47, 309-315.

Dawe, H. C. An analysis of two hundred quarrels of preschool children. Child Development, 1934, 5, 139-157.

De Vito, P. J. An analysis of selected behavioral characteristics of disadvantaged students. Journal of Educational Research, 1975, 68(5), 178-181.

De Wit, J., and Hartup, W. W. Determinants and origins of aggressive behavior. The Hague: Mouton and Co., 1974.

Dollard, J., Doob, L. W., Miller, N. E., Mowrer, O. H., and Sears, R. R. Frustration and aggression. New Haven: Yale University Press, 1939.

Eibl-Eibesfeldt, I. Ethology: The biology of behavior (2nd Ed.). Toronto: Holt, Rinehart and Winston Inc., 1975.

Emmerich, W. Some theoretical advantages of behavioral observations: Illustrations from a longitudinal study. Proceedings of the Biennial Meeting of the Society for Research in Child Development, 1973, (Philadelphia, Pennsylvania, March 29-April 11).

Esser, A. H. Dominance hierarchy and clinical course of psychiatrically hospitalized boys. Child Development, 1968, 39, 147-157.

Evans, C. S. Methods of rearing and social interaction in Macaca nemestring. Animal Behavior, 1967, 15, 263-266.

Feshbach, S. The function of aggression and the regulation of aggressive drive. Psychological Review, 1964, 71, 257-272.

Feshbach, N. Sex differences in children's modes of aggressive responses toward outsiders. Merrill-Palmer Quarterly, 1969, 15, 249-258.

Feshbach, N., and Sones, A. A. Sex differences in reactions of adolescents to outsiders. Developmental Psychology, 1970.

Fletcher, R. Instinct in man in light of recent work in comparative psychology (2nd ed.). London: Allen and Unwin, 1968.

Foss, B. (Ed.). New perspectives in child development. Canada: Penguin Books Ltd., 1974.

Freud, S. Beyond the pleasure principle. London: Hogarth, 1948.

Grant, E. C. An ethological description of non-verbal behavior during interviews. British Journal of Medical Psychology, 1968, 41, 177-184.

Green, E. H. Friendship and quarrels among preschool children. Child Development, 1933, 4, 237-252.

Haner, C. F., and Brown, P. A. Clarification of the instigation to action concept in the frustration-aggression hypothesis. Journal of Abnormal and Social Psychology, 1955, 51, 204-206.

Hartup, W. W. Violence in development: The function of aggression in childhood. Proceedings of the 81st Annual Convention of the American Psychological Association, 1973 (ERIC Document Reproduction Service No. ED08426).

Hartup, W. W. Aggression in childhood: Developmental perspectives. American Psychologist, 1974, 29(5), 337-341.

Hutchinson, R. R., Ulrich, E., and Azrin, N. H. Effects of age and related factors on the pain-aggression reaction. Journal of Comparative and Physiological Psychology, 1965, 59, 365-369.

Kalverboer, A. F. The method of direct observation of behavior: Some remarks on its relevance in the study of aggression. In Jan De Wit and W. W. Hartup (Eds.), Determinants and Origins of

Aggressive Behavior. The Hague: Mouton and Co., 1974, 87-93.

Klein, M. Contributions to psycho-analysis. London: Hogarth Press and Institute of Psycho-analysis, 1950, 276-277.

Loo, C. M. The effects of spatial density on the social behavior of children. Proceedings of the 80th Annual Convention of the American Psychological Association, 1972, 7(Pt. 1), 101-102.

Loo, C. The effects of spatial density on behavior styles of children. Proceedings of the 84th Annual Meeting of the American Psychological Association, 1976 (Washington, D. C., Sept. 3-7).

Lorenz, K. On aggression. New York: Harcourt, 1966.

Maccoby, E. M., and Jacklin, C. N. The psychology of sex differences. Stanford, California: Stanford University Press, 1974.

McGrew, W. C. An ethological study of agonistic behavior in preschool children. In C. R. Carpenter (Ed.), Proceedings of the Second International Congress of Prematology. Vol. 1 Behavior. Basel: Karger, 1969, 149-159.

McGrew, P. L. Social and spatial density effect on spacing behavior in preschool children. Journal of Child Psychology and Psychiatry, 1970, 11, 197-205.

McGrew, W. C. An ethological study of children's behavior. New York: Academic Press, 1972.

McGuire, J. M. Aggression and sociometric status with preschool children. Sociometry, 1973, 36(4), 542-549.

Miller, N. E. The frustration-aggression hypothesis. Psychological

Review, 1941, 48, 337-342.

Missakian, E., and Hamer, K. Aggression and dominance relations in young children. Synanon Foundation, Marshall, California, 1974. (ERIC Document Reproduction Service No. ED107357).

Montague, A. (Ed.) Man and aggression. New York: Oxford University Press, 1968.

Moynihan, M. Some aspects of reproductive behavior in the Black-headed Gull (Larus ridibundus L.) and related species. Behavior, 1955, Supplement 4.

Muste, M. J. and Sharpe, D. F. Some influential factors in the determination of aggressive behavior in preschool children. Child Development, 1947, 18, 11-28.

Patterson, D. S. Social ecology and social behavior: The development of the differential usage of play materials in preschool children. Proceedings of the 4th Biennial South-eastern Conference on Human Development, 1976 (Nashville, Tennessee, April 15-17).

Patterson, G. R., Litman, R. A., and Bricker, W. Assertive behavior in children: A step toward a theory of aggression. Monographs of the Society for Research in Child Development, 1967, 32, 1-43.

Poorman, P., Donnerstein, E., and Donnerstein, M. Aggressive behavior as a function of age and sex. Journal of Genetic Psychology, 1976, 128(2), 183-187.

Richards, S. M. The concept of dominance and methods of assessment.

Animal Behavior, 1974, 22, 914-930.

Rowell, T. E. The concept of social dominance. Behavioral Biology, 1974, 11, 131-154.

Sand, E. A., Emery-Hauzeur, C. L., and De Borggraef, F. R. Aggressive behavior among children three to nine years of age: Longitudinal study. Enfance, 1973, Jan. No. 1-2 1-21.

Sears, R. R. Relation of early socialization experiences to aggression in middle childhood. Journal of Abnormal Social Psychology, 1961, 63, 466-492.

Seay, B., and Harlow, H. F. Maternal separation in the rhesus monkey, 140. Journal of Nervous and Mental Disease, 1965, 434-441.

Serbin, L. A., and Others. A comparison of teacher response to the preacademic and problem behavior of boys and girls. Child Development, 1973, 44, 796-804.

Singer, D. G., and Singer, J. L. Family television viewing habits and the spontaneous play of pre-school children. Proceedings of the 82nd Annual Meeting of the American Psychological Association, (New Orleans, Louisiana, Aug. 30-Sept. 3).

Singer, J. L. The child's world of make-believe. New York: Academic Press, 1973.

Smith, P. K., and Connolly, K. Patterns of play and social interaction in preschool children. In N. G. Blurton Jones (Ed.), Ethological studies of child behavior. London: Cambridge University Press, 1972.

Smith, P. K., and Green, M. Aggressive behavior in English nurseries and playgroups: Sex differences and response of adults. Child Development, 1975, 46, 211-214.

Southwick, C. H. (Ed.). Primate social behavior. Princeton, N. J., Van Nostrand, 1963.

Spalding, C. A. (1873). Instinct with original observation on young animals. British Journal of Animal Behavior, 1954, 2, 1-11.

Storr, A. Human aggression. London: Allen Lane, 1968.

Strayer, F. F., and Strayer, J. An ethological analysis of social agonism and dominance relations among preschool children. Child Development, 1976, 17, 980-989.

Sundstrom, E., and Altman, I. Field study of territorial behavior and dominance. Journal of Personality and Social Psychology, 1974, 30, 115-124.

Thompson, C. M. Interpersonal psychoanalysis. New York: Basic Books, 1964, 179.

Tinbergen, N. The herring gull's world. London: Methuen, 1953.

Tinbergen, N. Comparative studies of the behavior of gulls (Laridal): A progress report. Behavior, 1959, 15, 1-70.

Tinbergen, E. A., and Tinbergen, N. Early childhood autism - an ethological approach. Fortschr. Verhaltensforsch, 1972, 10, 1-53.

Torrance, E. P. "Structure" can improve the group behavior of five-year-old children. Elementary School Journal, 1971, 72(2), 102-106.

Turner, C. W., and Goldsmith, D. Effects of toy guns and airplanes on children's antisocial free play behavior. Journal of Experimental Child Psychology, 1976, 21(2), 303-315.

Ulrich, R. Pain as a cause of aggression. American Zoologist, 1966, 6, 643-662.

White, N. F. (Ed.). Ethology and psychiatry. Toronto: University of Toronto, 1974.

Wuellner, L. The effect on aggression of variation in amount of opportunity for play. University of Illinois, Children's Research Center, Urbana, Illinois, 1969, (ERIC Document Reproduction Service No. ED043384).

APPENDIX A

INTER-OBSERVER RELIABILITY

Procedures

Prior to the pilot study, the two observers developed skills in observing young children through visiting kindergartens (private and public) and recording the observed behavior. In the pilot study, the observers spent three mornings developing the procedures for use in the main study when inter-observer reliability checks were needed. In the main study, four mornings were scheduled during which the two observers worked together recording the behavior of the target children. The procedures for establishing inter-observer reliability checks were as follows:

1. Each observer was equipped with a tape recorder, a stop watch, a list of names of the children designated as targets, and a time schedule.
2. Approximately fifteen seconds prior to the commencement of an observation, the observer would locate the target child and as inconspicuously as possible, moved to where the target was playing.
3. Initially, the observers would place themselves physically close to one another and one of the observers would state the child's name, the location, the time and then the word "start" into both microphones. At this point, the observers would move away from one another and begin to record the behavior of the target child.
4. At the end of the two minute interval, the observers would

stop, noting the time as they did so.

Judging

In judging the observations, the writer divided each two-minute segment into four thirty second time periods. Each thirty second time period was then judged according to two main categories - agreement or disagreement. This procedure was followed on each of the four days scheduled for inter-observer checks, for each of the previously designated target children. Agreements were tallied on a daily basis and the percentage calculated for each of the four days were as follows:

	Total No. of Agreements	Percentage of Agreements
Day I (Mar. 7/77, Mon.)	35/36	97.22
Day II (Mar. 10/77, Thurs.)	33/36	91.67
Day III (Mar. 16/77, Wed.)	32/36	88.89
Day IV (Mar. 22/77, Tues.)	26/28	92.86

An inter-observer reliability score was established by calculating the average of agreements over the four day period. The percentage of agreements between the two observers was 92.66. This was judged to be an acceptable level of agreement.

The judgment of agreement was based on a subjective judgment of whether the information recorded by each observer was basically similar or basically dissimilar.

APPENDIX B

INTER-CODER RELIABILITY

Procedures

The writer invited a colleague to assist in establishing intercoder reliability. Reliability of coding was established in two phases. In phase one, the colleague, acting as an independent coder, was requested to analyze a random sampling of the transcripts and identify all of the interactions which conformed to the definition of aggression. In phase two, the independent coder was requested to analyze a random sampling of observations containing aggressive behavior and to classify the aggressive segments according to the following categories:

Instrumental or Hostile Aggression
Aggressive Acts by Description and Function
Antecedent Events by Description and Function

Coding

In phase one, 10 percent of the two-minute observations were randomly drawn and re-coded by the independent coder. The independent coder adopted the coding procedures used by the writer but was not told how the segments of behavior were coded by the writer.

The independent coder analyzed each of the fourteen two-minute observations classifying the behavior within each fifteen second interval as aggressive or non-aggressive.

A modified version of Strayer, F. and J. Strayer's (1976) formula was used to compute, in percentage points, the degree of agreement with respect to the coding carried out by the coders. Hence, the total number of coding responses in agreement were divided by the total number of coding responses in agreement plus the total number of disagreements times 100 or

$$\frac{\text{Total Agreements}}{\text{Total Agreements + Total Disagreements}} \quad 100$$

The percentage of agreements between the two coders for the fourteen two-minute observations was 95.41 percent. Thus reliability of coding in phase one of the study appeared to be satisfactory.

In phase two, 10 percent of the two-minute observations containing aggressive acts were randomly drawn from the total number of aggressive observations and re-coded by an independent coder. On the basis of fifteen second intervals, the independent coder analyzed the aggressive acts according to the previously described system of categories.

A modified version of Strayer, F. and J. Strayer's (1976) formula was used to compute, in percentage points, the degree of agreement between the coding which was carried out on an independent basis.

The percentage of agreements between the two coders for the eleven two-minute observations was calculated as follows:

Categories	Agreement
Hostile/Instrumental Aggression	95.83%
Aggressive Acts by Description	93.62%
Aggressive Acts by Function	93.62%
Antecedent Events by Description	91.30%

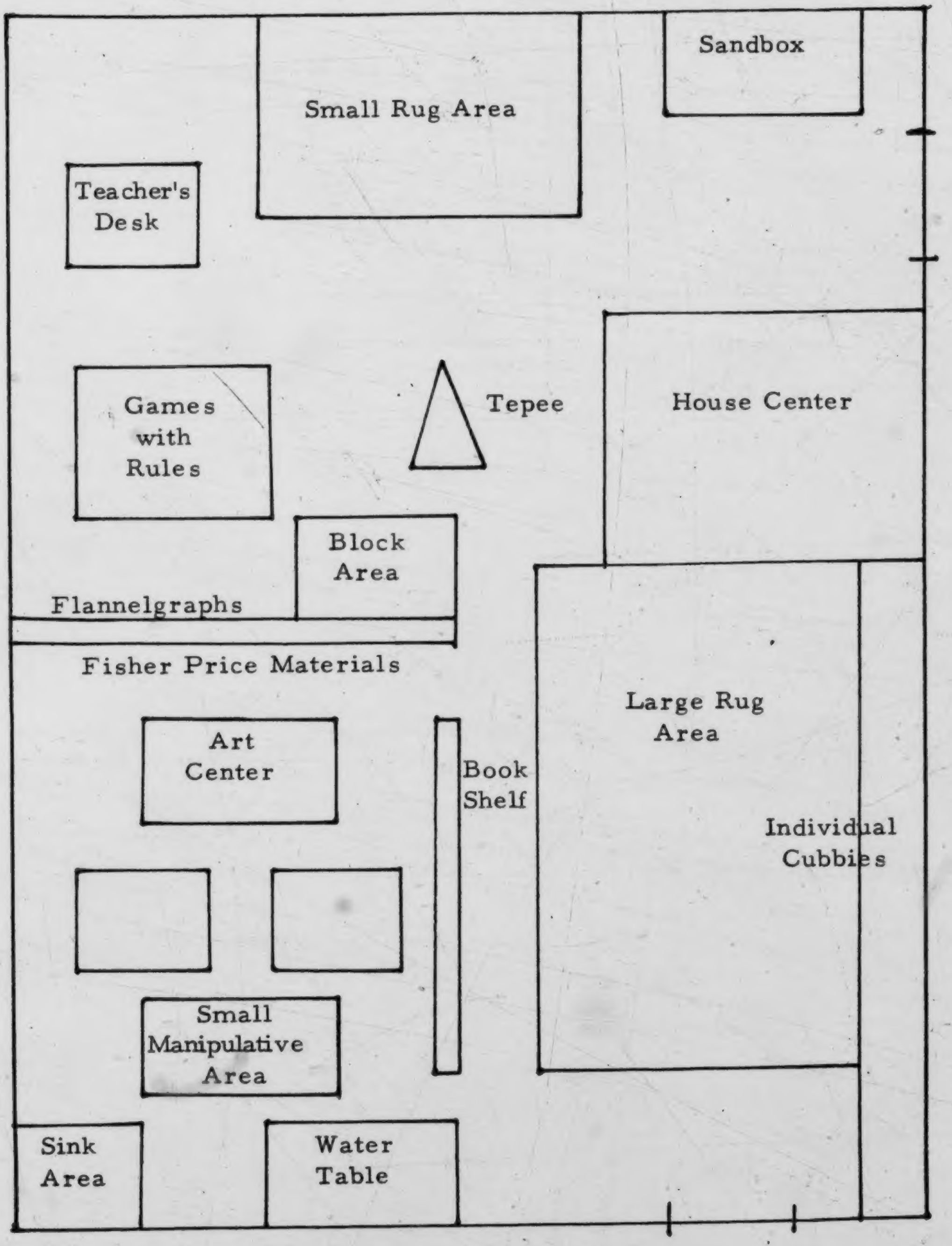
Antecedent Events by Function	85.71%

Thus reliability of coding in phase two of this study appeared to be satisfactory as well.

APPENDIX C

FIGURES

Figure 1


Sandbox
Small Rug Area
Teacher's Desk
Games with Rules
Tepee
House Center
Block Area
Flannelgraphs
Fisher Price Materials
Large Rug Area
Art Center
Book Shelf
Individual Cubbies
Small Manipulative Area
Sink Area
Water Table

Schematic View of the Classroom